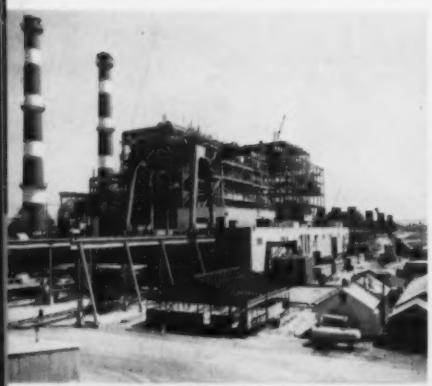
# ELECTRICAL WEST

October 1954
25 Cents

SPOKESMAN FOR THE MOST HIGHLY ELECTRIFIED REGION OF THE U. S.



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**We Must Recruit More EEs ..... 67**

1954 is the year of

Light's Diamond Jubilee

the 75th birthday

WA

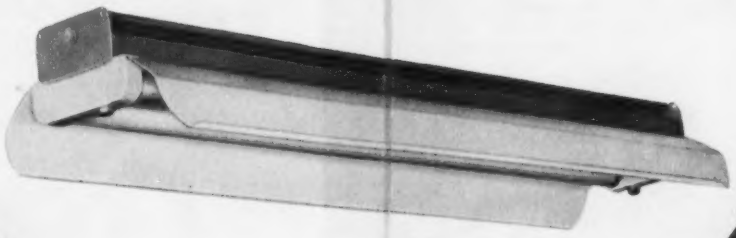
PAG

*In your living, every day and wherever you go: comfort, convenience, pleasure, economy . . . the results of 75 years of electrical progress!*

THOMAS A. EDISON
*Father of the Electric Industry*

SOUTHERN CALIFORNIA EDISON COMPANY

NT-2461



# AVY

# GES

efficient as the factory it lights!

USTRO-LUX

MASTER FLOOD

168 RECESSED TROFFER

PM-284 COLLEGIATE

EDUCATOR

STANDARD DOME

quality workmanship = quality

This is the formula for the plant

out impairing efficiency. The handsome

NT - 2461 Industro - Lux is sturdily built, engineered to deliver the proper

lumens to a job, and scientifically designed for simplified installation any-

where. All Smoot-Holman fixtures eliminate the frequent repairs and worker errors chargeable to

"bargain" lighting. Other fine Smoot-Holman equipment brings the economy of quality to office, institution

and outdoor installations. Specify and Install "QUALITY"— THERE IS A DIFFERENCE—

SMOOT-HOLMAN

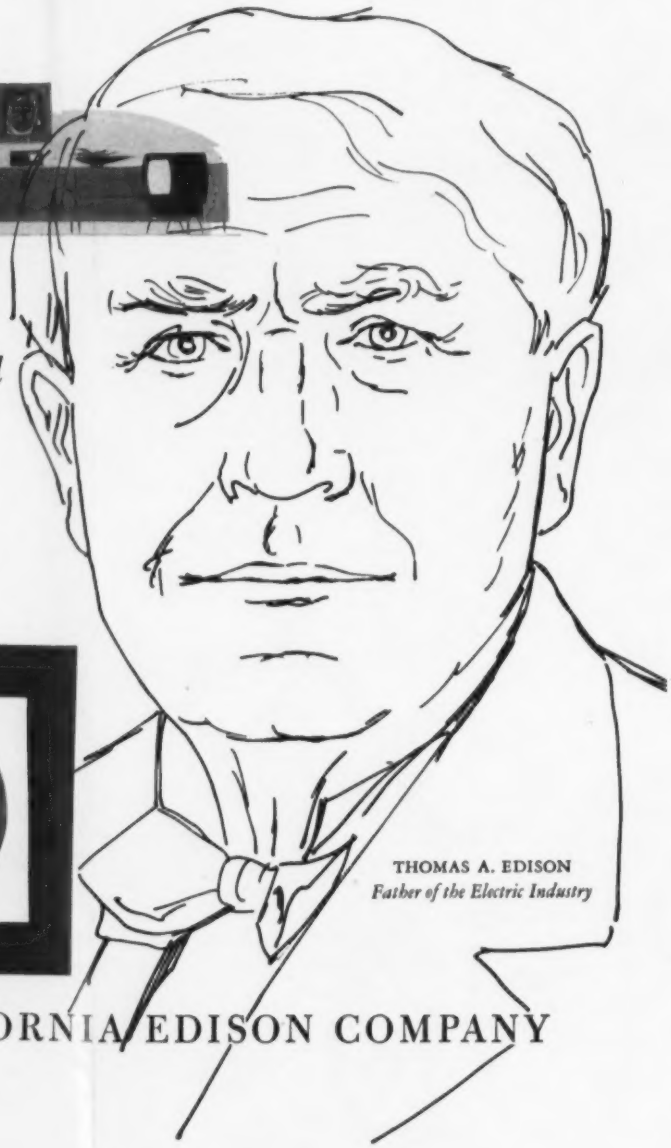
SALES OFFICES IN MOST PRINCIPAL CITIES • BRANCH OFFICE—WAREHOUSE SAN FRANCISCO

1954 is the year of

# Light's Diamond Jubilee

## the 75th birthday of electric service

*In your living, every day and wherever you go: comfort, convenience, pleasure, economy . . . the results of 75 years of electrical progress!*



THOMAS A. EDISON
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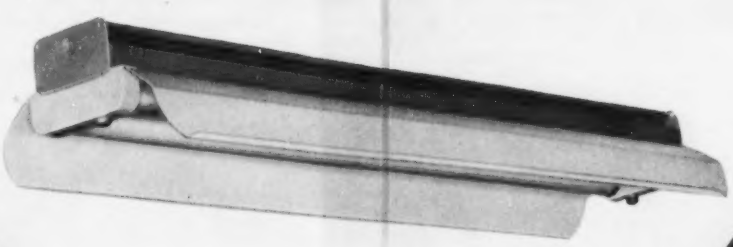

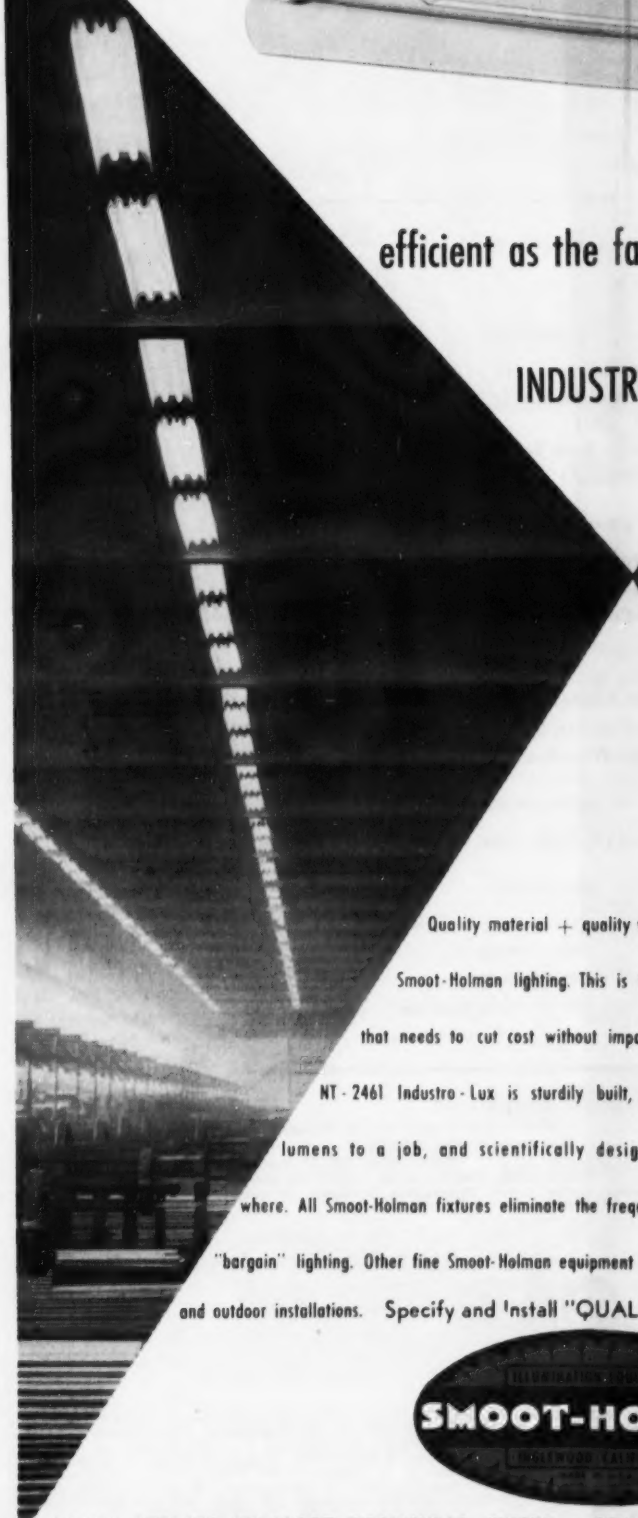

efficient as the factory it lights!

INDUSTRO-LUX

MASTER FLOOD

168 RECESSED TROFFER

PM-284 COLLEGIATE

EDUCATOR

STANDARD DOME

Quality material + quality workmanship = quality Smoot-Holman lighting. This is the formula for the plant that needs to cut cost without impairing efficiency. The handsome NT-2461 Industro-Lux is sturdily built, engineered to deliver the proper lumens to a job, and scientifically designed for simplified installation anywhere. All Smoot-Holman fixtures eliminate the frequent repairs and worker errors chargeable to "bargain" lighting. Other fine Smoot-Holman equipment brings the economy of quality to office, institution and outdoor installations. Specify and Install "QUALITY"— THERE IS A DIFFERENCE—

SMOOT-HOLMAN

SALES OFFICES IN MOST PRINCIPAL CITIES • BRANCH OFFICE—WAREHOUSE SAN FRANCISCO

OCTOBER 1954

SPOKESMAN FOR MOST HIGHLY ELECTRIFIED REGION OF THE U. S.
The all-industry magazine of progress, established 1887, and incorporating the "Electrical Journal," "Journal of Electricity, Power and Gas" and "Journal of Electricity." Contents copyright, Sixty-seventh year of publication

VOL. 113
NO. 4

# ELECTRICAL WEST

George C. Tenney, Editor
W. A. Cyr, Associate Editor
Peggy Boyer, Associate Editor
Walter C. Heston, Engineering Editor
John Cootz, Typography

**Next Month**

Feature for November will be an article on the all-important subject of cost control. A utility executive analyzes operations for leads and points out some fields for specific savings.

The spectacular Kitimat development in British Columbia will be the subject of an engineering article describing this power-aluminum project. Transmission at 287 kv over a mountain pass inaccessible six months of the year posed a major problem.

Two new Western steam power plants will be highlighted—the Saguaro plant of Arizona Public Service and the Carbon plant of Utah Power & Light Co. that sets on a coal mine.

Raising towers on a 110-kv line in the high Rockies will be an interesting picture-story.

An unusual underground job in San Francisco over hills and under streets makes a good piece.

Sorry the Bonneville 345-kv article was not forthcoming but it is now definitely scheduled for December.

Denver is enjoying a building boom with two new 23-story buildings nearing completion. The first of these to be covered—the Mile High Center building—has a number of most interesting electrical features.

November is our annual Directory issue and that alone makes it an outstanding number.

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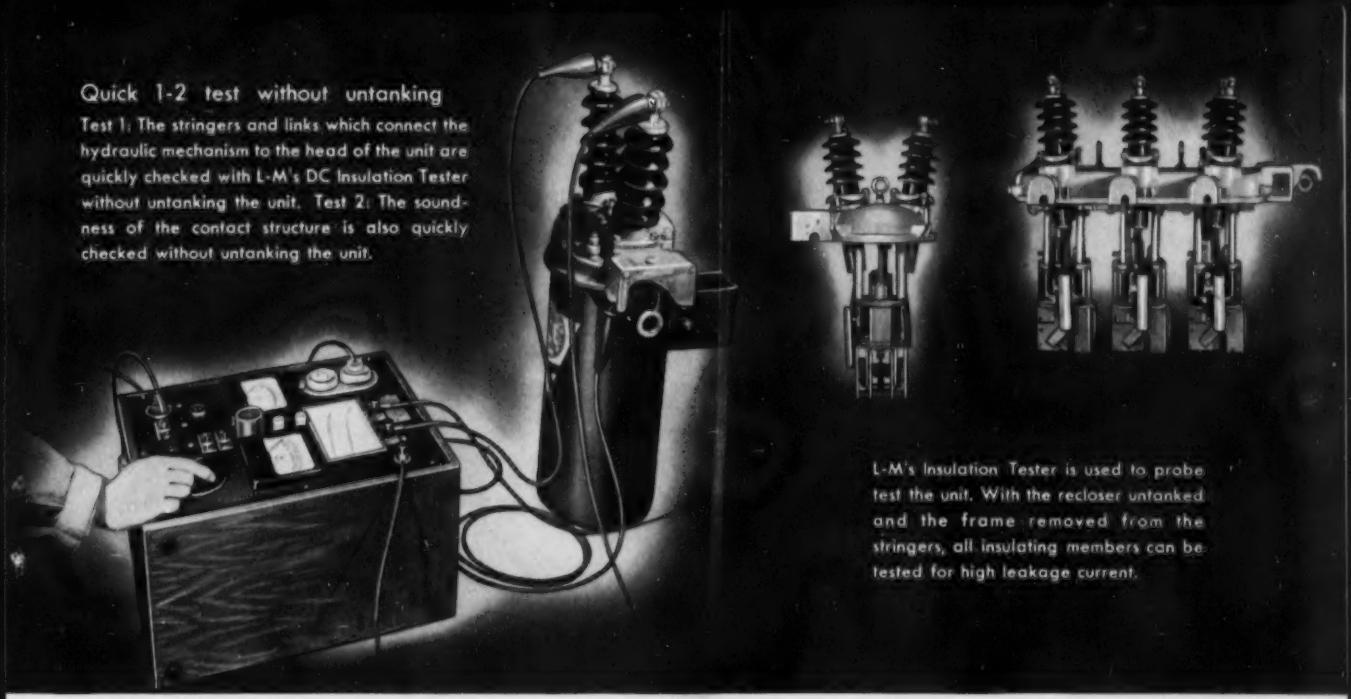


**Quick 1-2 test without untanking**

Test 1: The stringers and links which connect the hydraulic mechanism to the head of the unit are quickly checked with L-M's DC Insulation Tester without untanking the unit. Test 2: The soundness of the contact structure is also quickly checked without untanking the unit.

L-M's Insulation Tester is used to probe test the unit. With the recloser untanked and the frame removed from the stringers, all insulating members can be tested for high leakage current.

# Take Advantage of Longest Practical Maintenance Cycle in Kyle® Reclosers

**The maintenance cycle may be one, three, or more years, depending on climatic conditions and the duty imposed on the recloser. A method is given for determining frequency and simplifying maintenance.**

by **R. C. KIRK**
Manager
Kyle Products Sales
Line Material Company

Many Kyle reclosers are still in operation after three, four, or more years without any maintenance. To assure dependable and continued operation, such reclosers should be checked. Kyle engineers recommend a program of spot checking reclosers, to determine the longest safe maintenance cycle for your operating conditions.

The length of time a recloser can be operated without maintenance depends on several factors. Collection of moisture, for example, is a result of time, loads, and climatic conditions. The collection of carbon is, of course, a result of the operating duty, i.e., the number of arc interruptions, magnitude of the current, voltage, and power factor of the fault current. These factors, involved in determining the recloser maintenance cycle, vary with each section of the country and with the operating duty imposed on the recloser. To obtain the longest practical maintenance cycle you should organize a program that meets your individual requirements.

One means of making a quick insulation check, without disassembling the recloser, is with L-M's new DC Insulation Tester. This is a highly efficient, low-priced portable unit that accurately determines the condition of insulation in reclosers and other apparatus.

If you find it necessary to replace the contacts on the recloser, it is advisable to replace the complete contact assembly, because this insures obtaining the proper setting of the contacts without calibration equipment. L-M makes available a complete contact assembly which is pre-adjusted at the factory and very easy to install. All the insulation parts as well as the contact assembly are shipped in a sealed plastic bag so that they will be protected from moisture in handling and storage.

### Get The Facts On Maintenance

The L-M Field Engineer can help you with your maintenance problems. Discuss them with him—you'll find his advice helpful. Detailed maintenance instruction bulletins are available for Kyle reclosers, switches and sectionalizers. A bulletin that discusses factors determining the frequency of maintenance periods and how maintenance should be done is also available. Ask your L-M Field Engineer for these bulletins or write Kyle Products Division, Line Material Company, Milwaukee 1, Wisconsin (a McGraw Electric Company Division).

Coils are vacuum-impregnated and shipped in oil-filled, sealed cans. L-M reclosers are so constructed that coils of different ampere ratings are interchangeable.

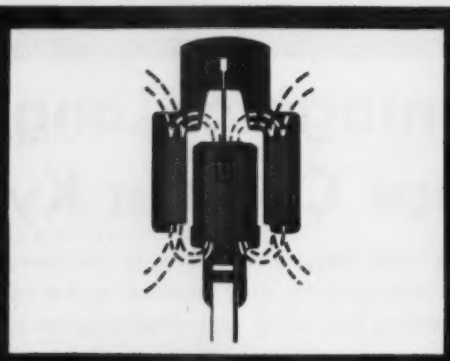
Other insulation parts as well as the contact assembly are shipped in sealed plastic bags to protect against moisture and dirt.

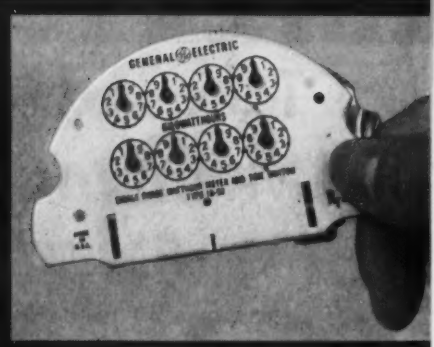


**LINE MATERIAL Kyle® Reclosers**

*Another new member of the I-50 family*

# 7 REASONS WHY THIS NEW G-E METER* WILL LOWER YOUR METERING COSTS

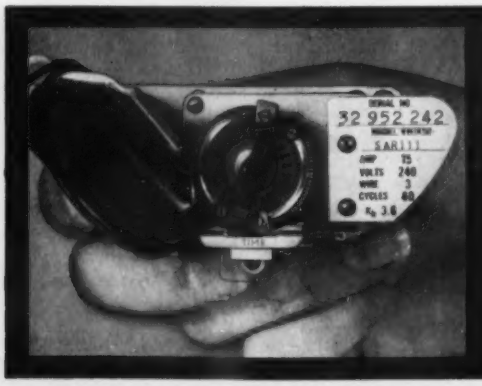


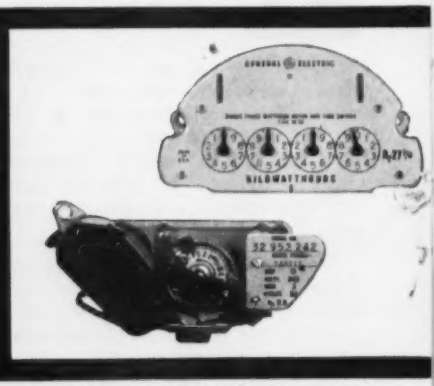



**1** **NEW TYPE IR-50** for off-peak control incorporates the many features of the G-E I-50 meter to bring you greater dependability and accuracy.

**2** **MAGNETIC SUSPENSION SYSTEM,** identical to the I-50 watthour meter's "floating disc," eliminates bearing wear and thus keeps maintenance costs to a minimum.

**3** **NEWLY REDESIGNED REGISTER,** either single or double rate, has maximum legibility and accuracy. Resetting is simplified with individual plungers.




**4** **IMPROVED TIME SWITCH** mechanism in new IR-50 incorporates 40-ampere silver contacts and Type SC-2 timing motor with the time-proven Telechron** rotor for longer life.

**5** **TIME SWITCH AND WATTHOUR REGISTER** are separate assemblies and can be removed from meter independently, making maintenance easier.

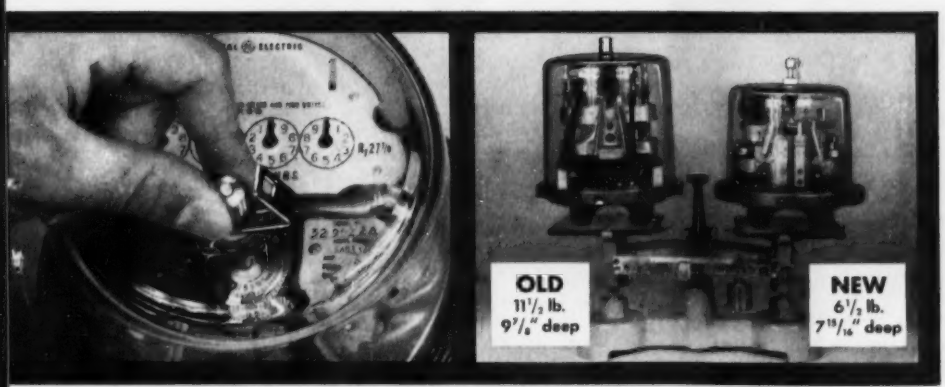
***THE GENERAL ELECTRIC IR-50 COMBINATION WATTHOUR METER AND TIME SWITCH** is the newest member of the I-50 family. For a sample demonstration, or for more information, contact your nearest G-E representative or write: Section 601-100, General Electric, Schenectady 5, N. Y.

**Reg. Trade-mark of General Electric Company.

## NEW

**General Electric Type IR-50 combination watthour meter and time switch**

**NEWEST MEMBER** of the General Electric I-50 family, the IR-50 meter registers and controls off-peak water-heater loads. Proven I-50 meter features such as stability of calibration, inherent accuracy, co-ordinated insulation, surge protection mean lower operating costs.




**6** **NO SCREWDRIVER IS NEEDED** for setting time dial on IR-50. External reset knob, which can be easily sealed or locked, facilitates setting.

**7** **COMPLETELY NEW DESIGN** of the G-E IR-50 meter, ⅓ smaller, and little more than half the weight of older types, means lower handling costs and faster, easier installation.

# GENERAL ELECTRIC

With factories in Anaheim, Los Angeles, Oakland, Ontario, San Francisco, San Jose, Seattle, and Richland, and Sales Offices in twenty Western cities.

# BTC

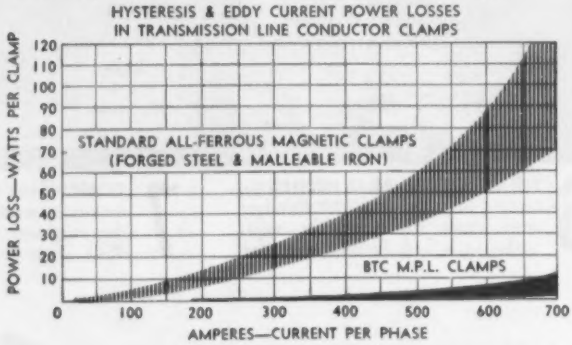
## Drop-Forged M.P.L. Aluminum SUSPENSION CLAMPS

***Forgings are employed*** where better strength, soundness and finish are required than can be obtained by other processes. Forging produces a fine, close-grained structure with the grain flow following the contour of the part and with optimum mechanical properties and ability to withstand severe loading, sudden shock and frequent reversal of stress.

***BTC clamp body is forged*** aluminum alloy . . . the strongest recommended for the purpose, fully heat-treated to develop maximum mechanical properties. In the heat-treated condition, its ultimate strength and hardness are more than twice that of alloys used in other processes, while its yield strength and endurance limit are more than three times greater. The more-than-adequate catalogued strength ratings of BTC Clamps are conservative and are exceeded in actual tests.

***Sold Through Your Insulator Manufacturer Only***

***Clamps are lightweight, too.*** Heavy sections or reinforcing ribs, which are necessary in other materials to develop desired strength and prevent collapse or breakage of the clamp under clamping U-Bolt pressure, are not required in BTC drop-forged Suspension Clamps. As a result, undesirable weight is eliminated without sacrifice of strength.




***Drop-Forged BTC Hi-Line Hardware***

## The BREWER-TITCHENER CORPORATION

**Cortland, New York**

***Specify BTC Clamps the next time you order from your insulator manufacturer. Their high strength is just one of the many reasons it pays to use these suspension clamps on your transmission lines.***

# B-M *Fittings*

## ARE APPROVED AS CONCRETETIGHT

When setting E. M. T. in concrete you can make each job easier and more profitable by using Briegel All Steel Indenter Fittings that have UL approval as CONCRETE-TIGHT. Contractors the world over recognize their cost cutting qualities and the fact that they make each wiring job a better job. It is only natural that Briegel Fittings are the most widely used E. M. T. connectors and couplings.

Cross Section Showing Indentations.

All B-M Indenter Fittings are U. L. approved as Concrete-tight and for General Use. (File Card E 10863). Also comply with Federal Specifications W-F-406.

**BRIEGEL METHOD TOOL CO.**

**GALVA, • ILLINOIS**

*Warehouse Stocks in Principal Cities for Immediate Delivery!*

*setting the pace of transformer design for the industry*

# New LX-T arrester has 300% greater "dynamic" current rating

The new LX-T lightning arrester for Westinghouse "CSP®" distribution transformers is an excellent example of the progress which has been made with expulsion arresters to keep pace with distribution system requirements.

You can install Westinghouse "CSP" transformers at any point on your distribution system. This includes—up close to a substation where dynamic current is high or at the end of your rural lines where it is low. The LX-T arrester has large surge current capacity and at the same time has exceptionally high, 60-cycle current limiting ability.

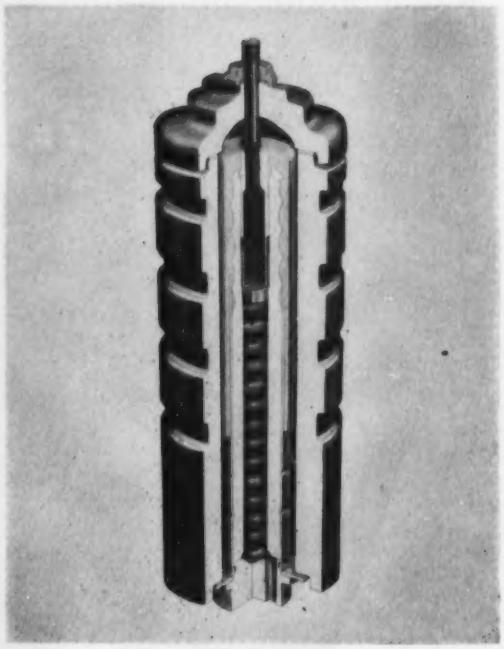
Greater current limiting action gives the LX-T the highest short-circuit rating of any expulsion arrester (20,000 amperes at 3 kv, 12,000 amperes at 9 kv). A unique arc-spiraling action which stretches out the path of 60-cycle current is the big reason. If power current does flow, the unique arc-spiraling action effectively limits the flow to a very small magnitude and to a small fraction of a half cycle. Current limiting action is so effective that it *prevents any* flow of power current in at least half of all operations.

The new arrester is ruggedly mounted directly to the wall of the "CSP" transformer where it provides maximum coordination with high-voltage bushings and transformer insulation level. It is available in 3-kv, 6-kv and 9-kv ratings.

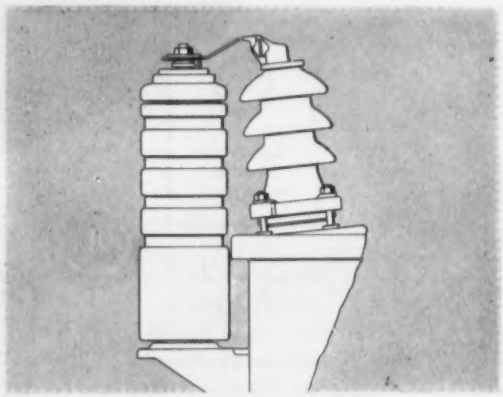
This latest development is just one of many arrester advances made since the first expulsion arrester was introduced by Westinghouse in 1932. Since then, excellent performance of 2,575,000 transformer arresters representing 18,000,000 "arrester years" has proved the effectiveness of the Westinghouse De-ion® arrester. The LX-T design has already been proved through 3 years of successful field experience with the LX distribution arrester.

For further details call in your nearby Westinghouse representative or write Westinghouse Electric Corporation, 3 Gateway Center, P. O. Box 868, Pittsburgh 30, Pa.

J-70731



The cutaway LX-T shown, illustrates the spiral filler which stretches out the path of 60-cycle current and limits it in both magnitude and duration.

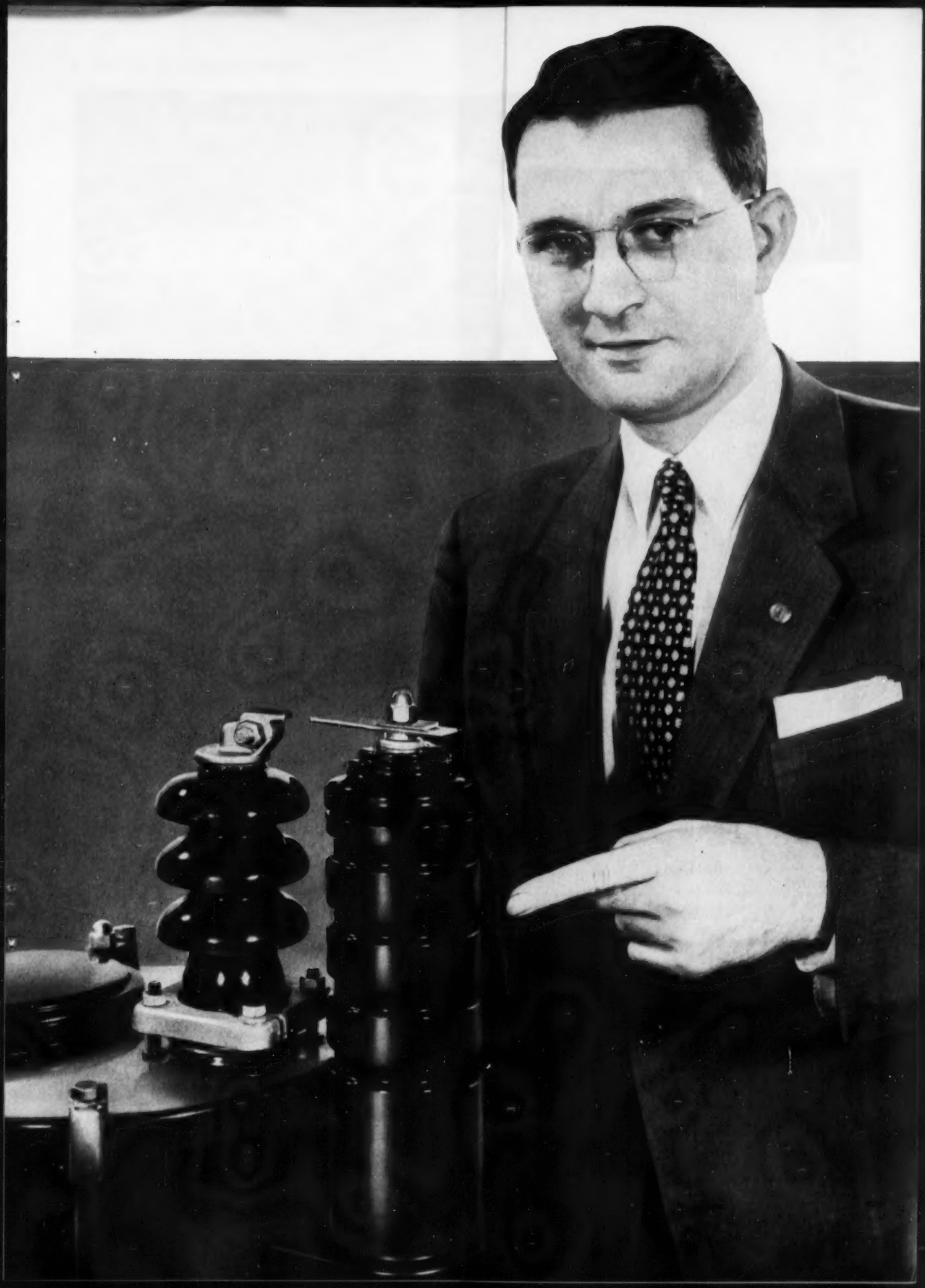


The top-series gap permits the arrester to be isolated from the line voltage except when operating. The spark-over of the LX-T is well below the BIL of the transformer it protects.

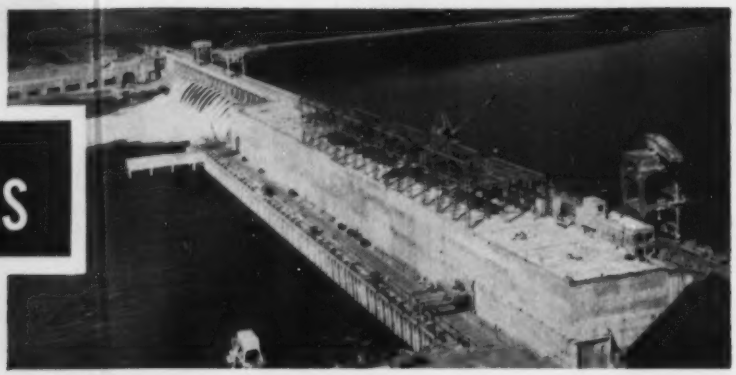
YOU CAN BE **SURE**...IF IT'S

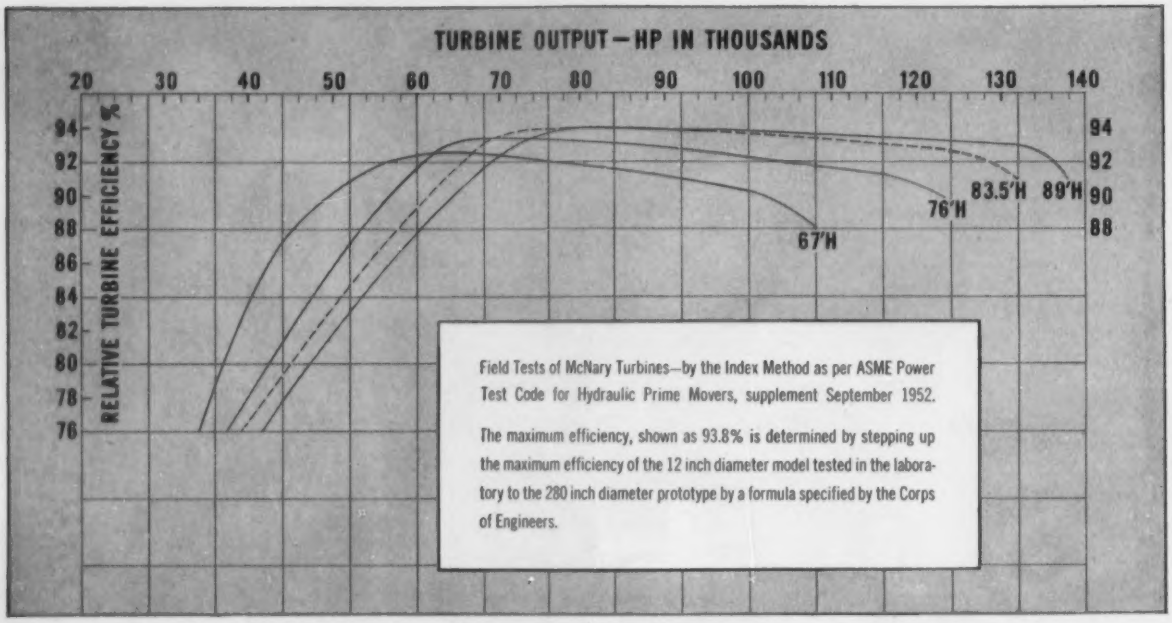
**Westinghouse**

Plants at Berkeley, Calif.; Sunnyvale, Calif.; Emeryville, Calif.; Los Angeles; Portland; Salt Lake City; Seattle; Denver



SMS
# KAPLAN TURBINES




TURBINE OUTPUT—HP IN THOUSANDS
20 30 40 50 60 70 80 90 100 110 120 130 140
RELATIVE TURBINE EFFICIENCY %
94 92 90 88 86 84 82 80 78 76
94 92 90 88
83.5'H
89'H
76'H
67'H
Field Tests of McNary Turbines—by the Index Method as per ASME Power Test Code for Hydraulic Prime Movers, supplement September 1952.
The maximum efficiency, shown as 93.8% is determined by stepping up the maximum efficiency of the 12 inch diameter model tested in the laboratory to the 280 inch diameter prototype by a formula specified by the Corps of Engineers.

## SMS-KAPLAN TURBINES AT McNARY DEVELOP 138,000 HP

Field test performance of SMS-Kaplan turbines already in operation at McNary Dam prove them to be the highest powered adjustable blade propeller units in the world.

From the laboratory model to the prototype unit, the outstanding performance of these turbines is a typical result of the specialized research, engineering experience and productive capacity that is ready to serve you at S. Morgan Smith Company. Write to us at York, Pennsylvania, for full information on hydraulic turbines or valves, gates, hoists and other accessories.

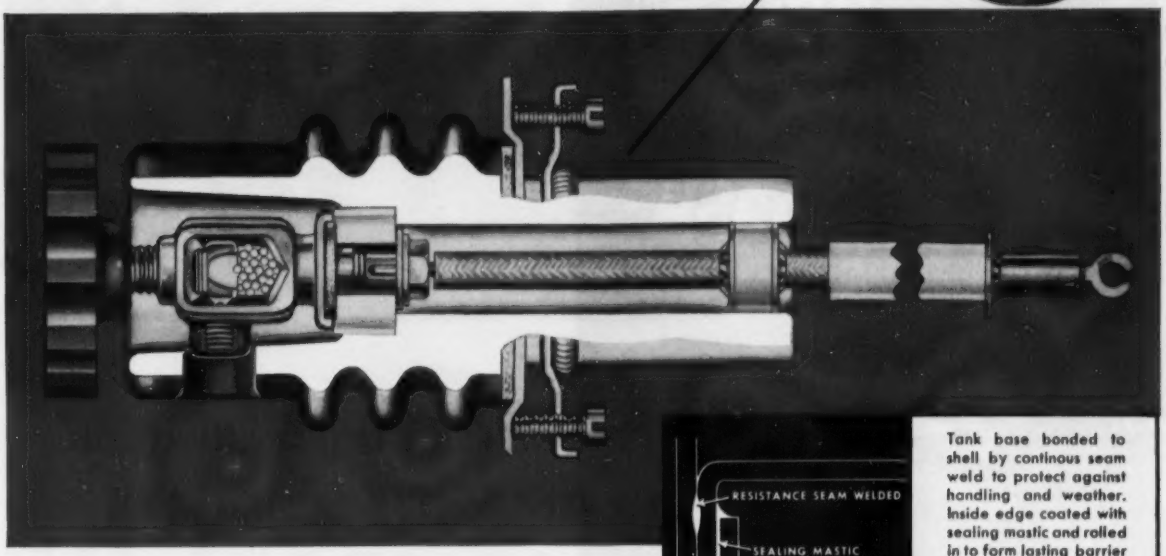
Hydraulic Turbines
Pumps
Gates & Hoists
Trash Rakes
Accessories

HYDRODYNAMICS

Rotovalves
Ball Valves
Butterfly Valves
Free-Discharge Valves
Controllable-Pitch Ship Propellers

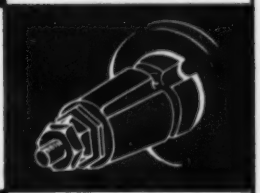
S. MORGAN SMITH CO.

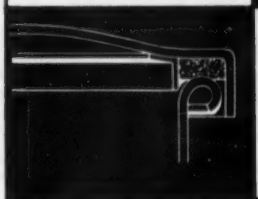
# FEATURED PERFORMER



Tank base bonded to shell by continous seam weld to protect against handling and weather. Inside edge coated with sealing mastic and rolled in to form lasting barrier against moisture, air and rust.

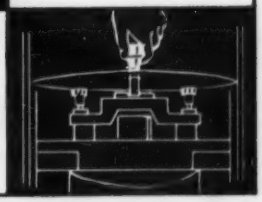
Low voltage bushings keyed to fit into notched hole in tank wall, thus lineman, tightening connections cannot rotate bushing, eliminating danger of accidential contact between "hot" lines.





Corprene gasket retained by ring welded to tank cover. Gasket is retained in position forming a perfect tank seal. Gasket is not cemented and can be used again and again.

Tap changer operating handle located above hot oil level. Double-moving contacts snap into position with a wiping action to assure positive contact.



Moloney HiperCore Distribution Transformers possess mechanical features to insure the excellent performance and longer, trouble-free operating life that you expect of Moloney Products.

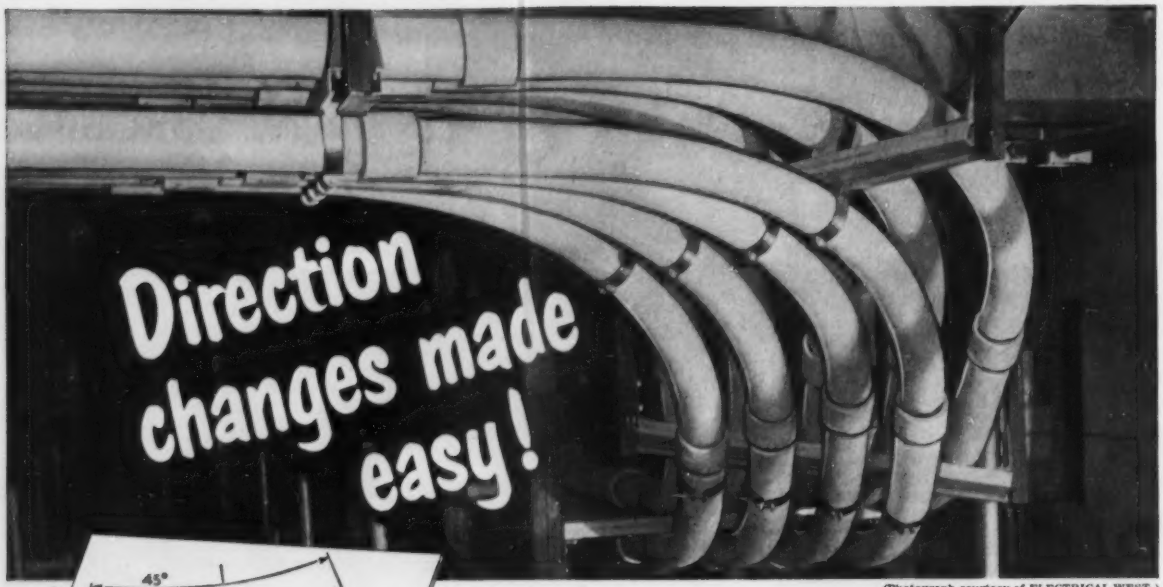
Sidewall mounted high voltage bushings of rugged design to stand the "gaff" so necessary for utility service will accomodate solid or stranded conductors in all standard sizes. "V" shaped clamping surfaces insure better contact with maximum cable contact surface. Easy entry from either side through tapered openings permit easier installations with less hazard to the lineman. Tightening knob of molded phenolic-cold rubber enables workmen to work "Hot".

ME54-33

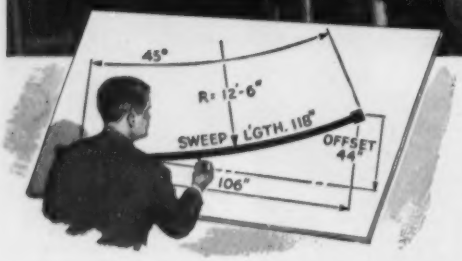
## MOLONEY ELECTRIC COMPANY

*Power Transformers • Distribution Transformers • Step Voltage Regulators • Regulating Transformers • Load Tap Changing Transformers • Load Center Transformers • Unit Substations Network Transformers • Constant Current Transformers • Capacitors • Transformers For Electronics*

SALES OFFICES IN ALL PRINCIPAL CITIES • FACTORIES AT ST. LOUIS 20, MISSOURI AND TORONTO, ONTARIO, CANADA




(Photograph courtesy of ELECTRICAL WEST.)

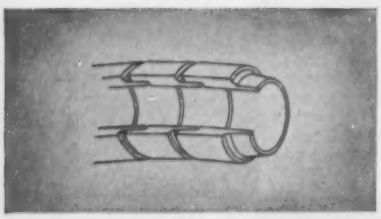



## ...with standard fittings for TRANSITE asbestos-cement DUCTS

When you use Transite Ducts, you have available a wide variety of standard fittings, made of the same asbestos-cement material as the ducts themselves. These fittings save time and expense because they provide maximum flexibility in laying out or constructing a duct system. They facilitate clearing unexpected obstructions or accommodating revisions in the original layout.

For instance, the new Transite 5° Bend Segments (shown at left) can be used alone to form simple and complex curvatures of any multiple of 5°. Used with other standard Transite curved fittings, they form curvatures of odd degrees. Thus, they enable you to simplify cross-overs and transformations . . . to clear obstructions . . . to form unusual or special bend or offset sections. They eliminate the need for purchasing special radii bends or sweeps. The other standard Transite fittings that facilitate directional changes are the offset bends, standard 45° and 90° bends, sweeps, curved segments, laterals, tees, elbows and deflection couplings.

For complete information write for new brochure EL-45-A, "Fittings and Dimensions of Transite Ducts." Contains all dimensional data required by the designer. Also available, "Transite Duct Underground Installation Sheet," EL-43-A. Johns-Manville, Box 60, New York 16, N. Y. In Canada, 199 Bay St., Toronto, Ontario.



**5° bend segment** sketched in detail. It consists of a straight section of Transite stock with a male taper on one end and a female taper on the other . . . each machined at an angle of 2½° to the center axis. Segments can thus be used single, or combined to form bend sections whose curvature is any multiple of 5°.

Photograph showing use of bend segments and curved segments with Transite Ducts.

**5 OTHER REASONS WHY TRANSITE DUCTS DO A BETTER JOB AT LESS COST:**

**1. Corrosion-Resistant.** Transite, being made of inorganic asbestos and cement, resists corrosion and is immune to electrolysis.

**2. Permanently Smooth Bore.** Transite makes long cable pulls easy, under any conditions. Danger of damage to cables is also minimized.

**3. Incombustible.** Transite will not burn or contribute to formation of smoke, gases, fumes. It confines burnouts, will not soften under heat.

**4. Higher Thermal Conductivity.** Cables run cooler in Transite, reducing $I^2R$ losses, increasing current capacity and prolonging insulation life.

**5. Easy to Install.** Transite Ducts are light weight, easy to handle. Joints are quickly made. Long 10-foot lengths reduce number of joints in line.

JOHNS-MANVILLE JM PRODUCTS

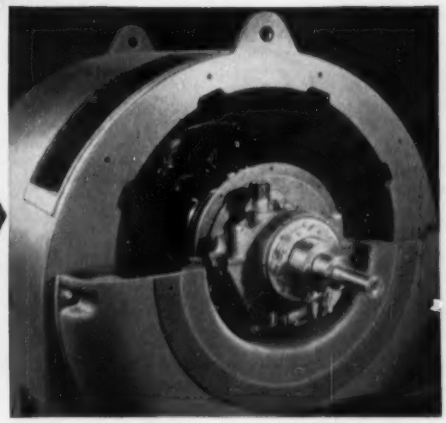
## Johns-Manville TRANSITE® DUCTS

TRANSITE KORDUCT—for installation in concrete

TRANSITE CONDUIT—for exposed work and installation underground without a concrete encasement

# new DESIGN...

## more protection with full accessibility



* New Allis-Chalmers slip-ring motor with inspection cover and upper half of end shield removed. Note accessibility of brushes, protection of bearing.

ALLIS-CHALMERS LARGE SIZE SYNCHRONOUS AND WOUND-ROTOR MOTORS have been completely redesigned with longer stator yokes and shorter end shields. Collectors and brushes are located inside the yoke for protection against physical damage, dripping moisture, dust and dirt.

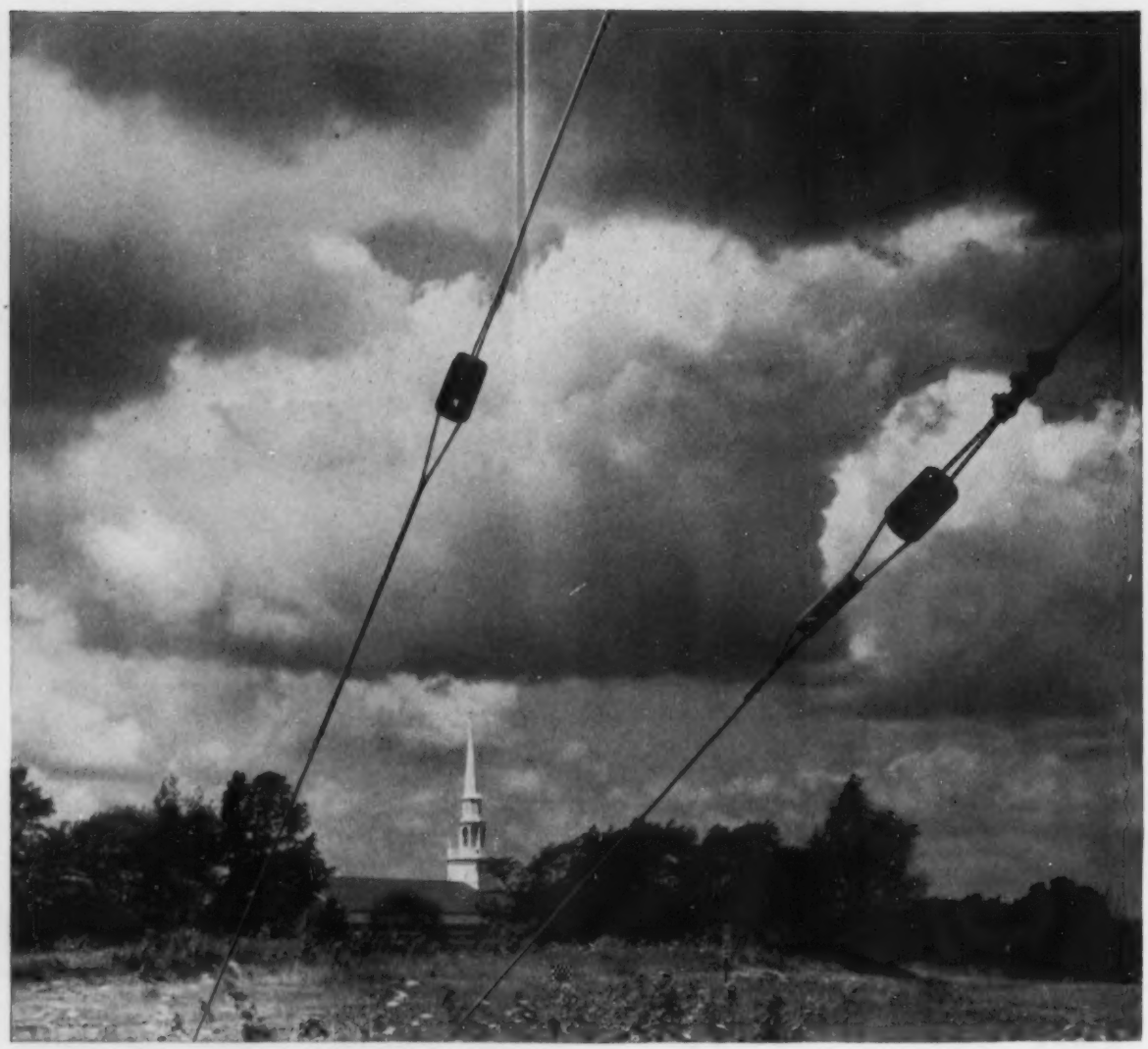
Capsule-type bearings give better bearing protection, too. The upper half of the end shield may be removed for inspection or cleaning of the interior of the motor without disturbing the exciter or exposing the bearing to the ravages of dirt, dust and oil contamination.

**All leads enclosed** — Both primary and secondary winding leads are brought out through separate conduit boxes. There is no loose wiring . . . no exposed leads anywhere.

**Easy maintenance** — Even though the new design offers maximum protection to brushes and collectors, internal parts are fully accessible for inspection and maintenance through large openings in the stator yoke. Opening covers are readily removed and are secured during operation by easy-operating, self-locking fasteners.

**Get details now** — This new design is available from approximately 250 hp at 300 rpm and up, in drip-proof and splash-proof construction. Call your Allis-Chalmers representative for complete details or write Allis-Chalmers, Milwaukee 1, Wisconsin. Ask for Bulletin 05R8183. A-4464

# ALLIS-CHALMERS



Guy-Grips* BY PREFORMED

...Economical...Neat...Efficient

*at the left

PLP PREFORMED LINE PRODUCTS COMPANY

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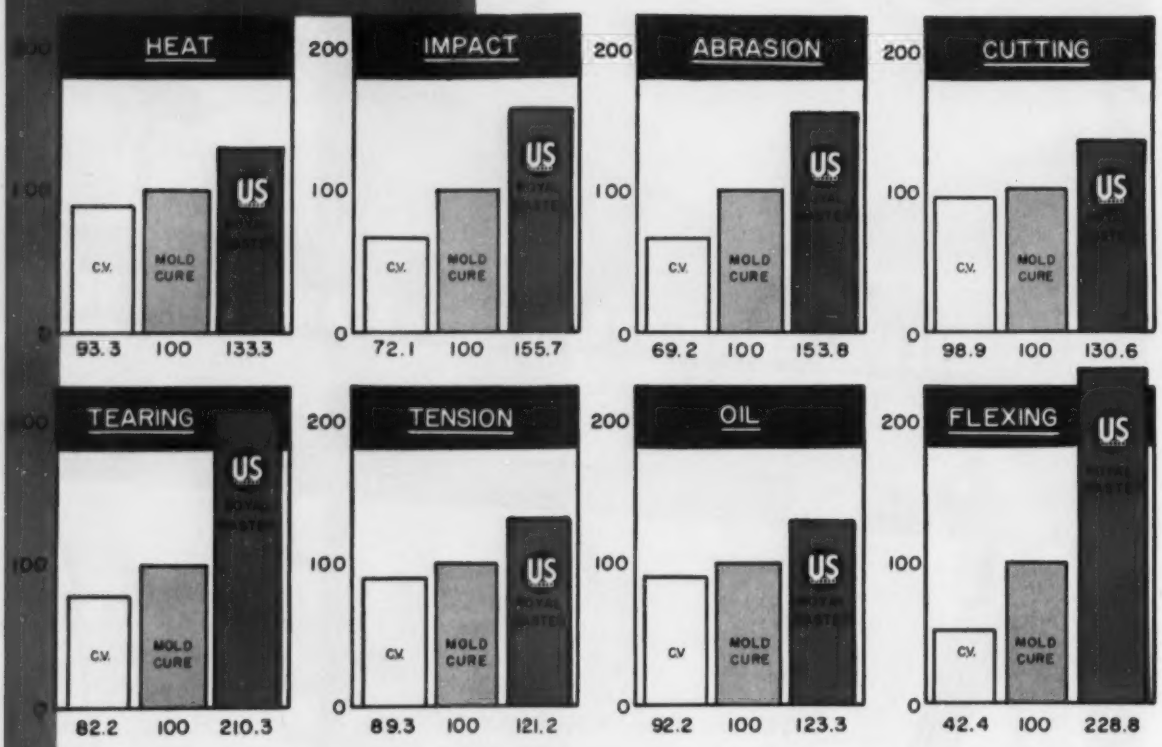
TELEPHONE: CLEVELAND EXpress 1-3571

STILL TIME TO SPECIFY SUNBEAM LIGHTING
The foundation is already in. The steel frame is going up. It's still not too late to recommend Sunbeam quality lighting as you probably planned originally. Nor is it too late to consider Sunbeam's new, 4-foot square, "large area" recessed light cells, #HSDP3800 series. Architecturally designed, easy to install, these Visionaires® have smooth, translucent white Plexiglas diffusing panels. They will produce high levels of illumination at comfortable low brightness in large offices, stores, lobbies and public buildings. While there's still time to specify — write for Sunbeam bulletin #721.
SUNBEAM visionaire
SUNBEAM LIGHTING COMPANY
777 East 14th P[illegible], Los Angeles 21, Calif.

# New U.S. ROYAL outperforms,




**Comparative performance of portable cords related to major life factors.**

Graphs illustrate the outstanding superiority of new U. S. Royal Master Cord—over the average of molded cords and the average of short-lived continuous vulcanized cords of other makes—on every major life factor. (Average of other molded cords is rated at 100%.)

US RUBBER

UNITED STATES

ELECTRICAL WIRE AND CABLE DEPARTMENT

# MASTER portable cord *outlasts all others!*

**Comparative tests show U. S. Royal Master gives $1.88 in value for every $1.00 spent — almost *twice* the service value of the average of other molded cords!**

**Two years ago,** "U. S." engineers began a *complete reexamination* of portable cord construction, service life, and the causes of cord failure.

**Over 10,000 tests** were made. More than a thousand cords of all leading makes, including our own famous U. S. Royal Cord, were analyzed, tested, and compared.

**Every life factor** was considered and carefully evaluated, alone and in its relation to overall cord performance and service life.

**Backed by 64 years of experience** in the manufacture of electrical wire and cable, U. S. Rubber engineers then translated their findings into an entirely new portable cord, designed to surpass any other previously made.

**Extensive tests, both in the laboratory and in outside plant installations** have proved this new portable cord startlingly superior in every respect!

**New U. S. Royal Master is unquestionably the finest cord you can buy!**

From every standpoint, as the charts at left illustrate, new U. S. Royal Master is a finer, more durable cord—actually gives 88% longer life than the average of competitive molded cords—far longer than *any* other cord—surpassing even a hypothetical cord incorporating the best features of all those tested!

**Far greater value, too!** In spite of almost doubled service life, this great new cord is in the same price category as other molded cords—giving you $1.88 in cord value for every cord $1.00!

**Prove to yourself** the outstanding superiority of new U. S. Royal Master Portable Cord — in both service life *and* economy! Get in touch with your "U. S." distributor today!

Approved by Underwriters' Laboratories, Inc.

**RUBBER COMPANY**

**ROCKEFELLER CENTER, NEW YORK 20, N. Y.**

# Leach CORPORATION
## PRESENTS
# "The Ultimate in Controls"

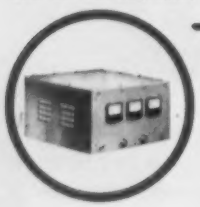
**Through modern research, engineering, development, design and production techniques, Leach CORPORATION presents electrical control units you will want to investigate . . . *immediately!* Take advantage of the savings they provide and, the *unsurpassed* performance characteristics they incorporate.**

### INET RX60 Voltage Regulator

Using a completely static system, the RX60 has been designed to provide precise Voltage Regulation for all 60 cycle equipment.

Available in range from 1 KVA to upwards of 5000 KVA, the RX60 can be regulated to ±½%. It is adaptable to any machine with an exciter or will provide its own excitation if necessary.

Having no tubes, contacts or other electronic devices, the RX60 will last indefinitely with a minimum of maintenance.



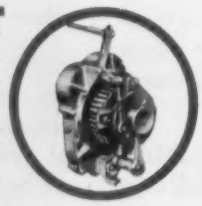
### INET RX400 Voltage Regulator

The RX400 also incorporates all static components and is made to give the same features of long life and low maintenance for 400 cycle applications.

Adaptable to all 400 cycle alternators, the RX400 will regulate voltage to ±½%, no load to full load.

This unit is recommended for use where precise regulation is important, such as Ground Power Supplies, Testing Aircraft Instruments, and in Guided Missile applications.

### INET DUPY Electro-Mechanical Governor



The DUPY is a load-sensing, electro-mechanical governor used for controlling the speed of a gas or diesel engine. In controlling this speed the DUPY holds D. C. Voltage stable and A. C. Frequency constant under *all load conditions.*

Extremely simple in design, the DUPY can be fitted to any make or model gas or diesel engine by the use of a simple adapter mounting.

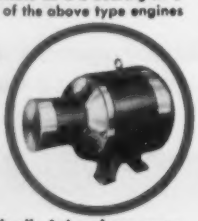
Through the use of the DUPY governor, time between engine overhauls can be increased by several hundred percent.

### PALMER Series 60 and 400 Alternators

A completely new line of 60 and 400 cycle alternators designed to give exacting frequency output.

Meeting all military and civilian requirements of perfect sine-wave, low harmonic content and precise output, PALMER "Series 60 and 400" alternators are ideal for aircraft, guided missile industries and industrial commercial application.

The "Series 60" may be coupled to any prime mover—gas, diesel, natural gas, etc. The "Series 400" is available as a 2-bearing M-G Set or may be purchased for use with any of the above type engines in 2 or 4 bearing units.



For the "Ultimate in Control" use a Leach CORPORATION "Precise Power Package" . . . PALMER 60 or 400 cycle alternators, INET RX Voltage Regulators—DUPY Governors. These units are designed to provide exacting regulation and performance.

Write for Bulletins describing these products in detail.

**Leach CORPORATION has outfitted a demonstration truck with all of the above operating equipment. Private and public showings are scheduled throughout the country. Write for date the truck will be in your vicinity.**

*Research*
*Development*
*Design*
*Production*

**Leach CORPORATION**
5915 Avalon Blvd., Los Angeles 3, California
*District Offices and Representatives in Principal Cities of U. S. and Canada*

SPECIALISTS IN ELECTRIC & ELECTRO-MECHANICAL CONTROLS


# ELECTRICAL BOOKS

CHRISTMAS LIGHTING AND DECORATING FOR THE HOME, *by Theodore Saros, 160 pages, 6x9, D. Van Nostrand Co. Inc., $1.95.*

A long-needed "how-to" book for the home maker to give ideas and simple methods for indoor and outdoor Christmas lighting decoration. Book covers materials and equipment, including lamps and wiring, and how to make displays and cutouts and light them. Also tells how to photograph such things, a tricky thing to do. Lighting portions are prepared with the aid of the electric lighting industry. Includes over 100 illustrations.

BIBLIOGRAPHY No. 9 ON FILING, CLASSIFICATION AND INDEXING SYSTEMS FOR ENGINEERING OFFICES AND LIBRARIES, *18 pages, mimeographed, Engineering Societies Library, $2.*

A selected list of references for engineers and librarians in organizing their own files or files of engineering offices and libraries. Some items are general, others related to specific subject fields. There are 79 annotated references.

GENERAL ELECTRICITY, *by E. W. Jones, 120 pages, paper bound, 8x10½, McKnight & McKnight Publishing Co., $1.25.*

An elemental course, the book presents and explains fundamental basic principles of electricity and magnetism; operation, care and upkeep of common devices; ordinary rules of safety. Shopwork, demonstrations and field trips are suggested, to make the study of electricity interesting and how to use this form of power without waste or danger. References are made to books and pamphlets so further study of each topic can be made if desired.

ELECTRIC POWER TRANSMISSION, the Power System in the Steady State, *by John Zaborszky and Joseph W. Rittenhouse, 676 pages, 6x9, The Ronald Press Co., $12.50.*

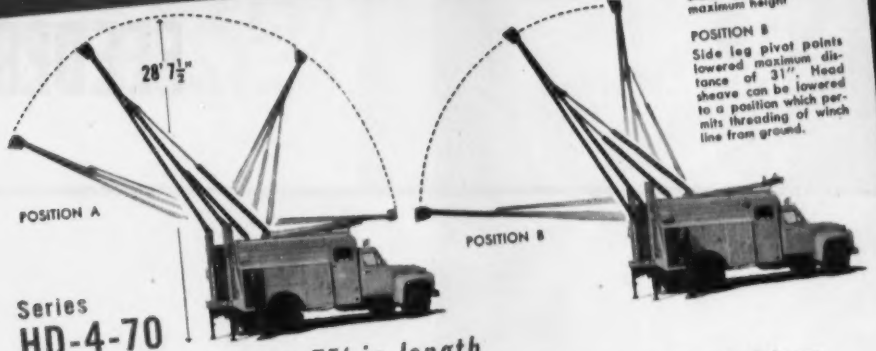
This is a treatise on the steady operation of transmission lines and power systems, and the methods available for study of such operation. The introduction covers the basic structure of the power system. The book may be used as a text for undergraduate or graduate courses in power transmission or as a reference work for the practicing engineer. Recent advances have been incorporated and much of the material has not previously been published in book form.

ALTERNATING CURRENT MACHINES, *third edition, by A. F. Puchstein, T. C. Lloyd and A. G. Conrad, 721 pages, 6x9, John Wiley & Sons Inc., $8.50.*

Although the form has not been changed greatly by this revision, approaches to the theories of some machines have been modified in this edition. Additional material is provided on adjustable-speed drives, rectifiers, self-synchronous machines, single-phase induction motors, and methods of determining the constants of synchronous machines have been added.

- POWERS *American*

# "Pole-Master" Fully Powered HYDRAULIC DERRICKS




POSITION A
Side leg pivot points at maximum height

POSITION B
Side leg pivot points lowered maximum distance of 31". Head sheave can be lowered to a position which permits threading of winch line from ground.

## Series HD-4-70

### *Handles poles up to 75' in length*

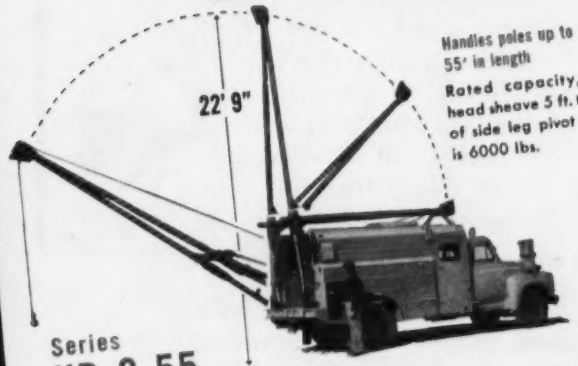
This is a heavy-duty derrick which can be operated by one man. Every movement—from carrying position to any point within the operating range—is hydraulically actuated. Shifting of control levers is the only manual requirement.

The derrick can be spotted in any position selected by the operator . . . and can be moved under load.

What's more, the position of the head sheave can be raised or lowered a distance of 31" . . . hydraulically . . . without changing angle of elevation.

With head sheave fully extended, 5 ft. to rear of side leg pivot points, the derrick has a capacity of 9000 lbs.

Complete details are given in Powers-American Bulletin No. 407. A copy, with quotation, is yours for the asking.




Handles poles up to 55' in length

Rated capacity, with head sheave 5 ft. to rear of side leg pivot points, is 6000 lbs.

## Series HD-2-55

Operation is completely hydraulic. Insertion and removal of locking pins, and shifting of control is the only manual requirement.

The derrick can be spotted in an unlimited number of positions, and moved while under load. It will lift loads to body cargo area.

Descriptive Bulletin No. 405R, with quotation, will be sent on request.

SERIES HD-2-40 Same as above, with 20' 10" ground-to-head sheave height.

- LIVE BOOM — CAN BE OPERATED UNDER LOAD
- HYDRAULIC HEIGHT ADJUSTMENT
- CAN BE USED WITH SINGLE-DRUM WINCH
- NO BODY LOAD AREA OBSTRUCTION — NO DANGEROUS EXPOSED MECHANISM

POWERS-AMERICAN DIVISION

**McCABE-POWERS AUTO BODY COMPANY**

5900 NO. BROADWAY • ST. LOUIS 15, MO.
428 LATHAM SQ. BLDG. • OAKLAND 12, CALIF.

# ARE YOU SECTIONALIZING YOUR FEEDERS AT

Now the simpler operating methods possible with S&C Load Interrupters can save equipment costs at sectionalizing points by almost one half.

S&C Load Interrupters can switch the circuit *without any external arcing.*

This means you can now use stick operation at many points where the present practice is group operation . . . group operation perhaps for the single purpose of actuating disconnects or horn-gaps when mounted upright at pole-top locations to give the necessary clearances for their rising arcs.

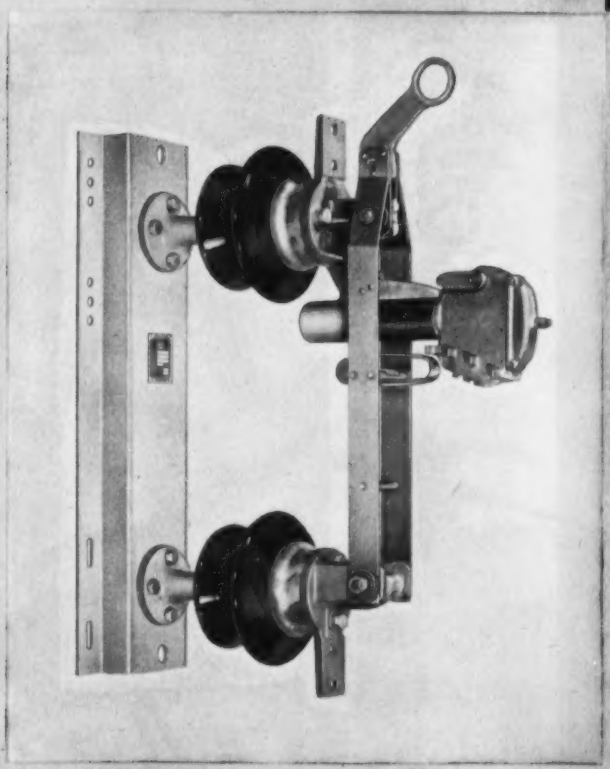
With the stick-operated* Load Interrupter, you actually save three ways: (1) No costly operating mechanism and pole-top frame to purchase; (2) Installation labor radically lowered; (3) Maintenance and adjustment costs reduced to a minimum.

Of course this cost-saving is just part of the story. Since the Load Interrupter can switch the circuit under any condition except short circuit, it permits completely new practices in switching distribution feeders.

**However, S&C Load Interrupters may also be obtained for group operation.*

Would you like to read more about the S&C Load Interrupter and how it saves money while improving operating practices? Write today for Catalog Section 760.

# DISTRIBUTION LOWEST COST?



Inverted Interrupters are readily accessible for operation with a hook stick.

Single-pole Load Interrupters for vertical mounting—14.4 kv 600 amp.

## S&C ELECTRIC COMPANY

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CHICAGO 40, ILLINOIS, U. S. A.

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POWER FUSES • DISTRIBUTION CUTOUTS AND FUSE LINKS • LOAD INTERRUPTERS • METALCLAD SWITCHGEAR

*Specialists in High-Voltage Circuit Interruption*

# SAVE

## $18.00 TO $85.64 PER 1000 FEET!

### with Kaiser Aluminum Weatherproof Conductor

Simply by converting from copper to Kaiser Aluminum weatherproof conductor you save from $18.00 to $85.64 per 1000 feet in *material costs alone!* And there are *other* important potential savings!

Aluminum's light weight permits easier, faster stringing—cuts handling and installation costs. In addition, reduced strains on pole, homes and fittings greatly lower the cost of maintenance and repair.

You can be sure of getting the *maximum* savings possible with aluminum conductor by specifying Kaiser Aluminum. Experienced Kaiser Aluminum field engineers work with your crews right in the field where desired, demonstrate ways to speed installations and cut costs.

**ACT NOW**—as hundreds of power companies are doing! Convert to Kaiser Aluminum conductor easily, efficiently, economically—and save thousands of dollars a year. Complete field and engineering services at no obligation. Contact the Kaiser Aluminum sales office listed in your telephone directory or one of our many distributors. Kaiser Aluminum & Chemical Sales, Inc. *General Sales Office,* Palmolive Bldg., Chicago 11, Ill.; *Executive Office,* Kaiser Bldg., Oakland 12, California.

**Kaiser Aluminum**

**THE NATION'S LARGEST PRODUCER OF TRIPLEX AND ALUMINUM WEATHERPROOF CONDUCTOR**

Estimate your savings with these Kaiser Aluminum weatherproof conductors:

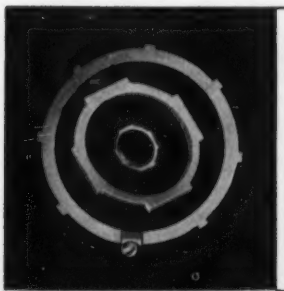
| | Per 1000 Ft. Lbs. | Cost |
|---|---|---|
| #6 Solid Copper TBWP* | 112 | $ 44.50 |
| #4 Solid Alum PE (2/64) | 48 | 26.50 |
| #4 Solid Alum Neo (3/64) | 64 | 26.50 |
| #2 7 Strand Copper TBWP* | 270 | 107.00 |
| 1/0 7 Strand Alum PE (4/64) | 141 | 69.60 |
| 1/0 7 Strand Alum Neo (4/64) | 172 | 69.60 |
| 2/0 7 Strand Copper TBWP* | 522 | 195.91 |
| 4/0 7 Strand Alum PE (4/64) | 261 | 136.00 |
| 4/0 7 Strand Alum Neo (4/64) | 306 | 136.00 |
| 4/0 7 Strand Copper TBWP* | 800 | 298.64 |
| 336400 CM, 19 Str. Alum PE (4/64) | 388 | 213.00 |
| 336400 CM, 19 Str. Alum Neo (5/64) | 469 | 228.00 |

May 6, 1954 prices based on 30,000# — F.O.B. Destination
*URC Copper Triple Braid Weatherproof

# ANY FITTING YOU CAN THINK OF!

## *Gedney's got it... in malleable iron... accurately machined ... quickest, least costly to install*

IT'S RIGHT THERE in the Gedney line... every fitting that you need for every sort of installation! And Gedney fittings are accurately machined and threaded... made of unbreakable malleable iron... individually inspected to assure you the lowest installed costs obtainable today! Always order Gedney fittings and you'll *always* make maximum savings of time and money.



**CONDUIT LOCKNUTS** — sizes from ⅜" to 6". Sizes ⅜" to 1½" are made of heavy nut lock steel... all other sizes, malleable iron. All sizes cadmium plated. Also bonding wedge locknuts, ½" to 6".

**3-PIECE CONDUIT COUPLINGS** — come in a large range of sizes from ½" to 6". Malleable iron, cadmium plated.

**CAPPED BUSHINGS**—available in a standard range from ½" to 6". Made of unbreakable malleable iron, cadmium plated.

**PIPE STRAPS — CLAMP BACKS and NEST BACKS** — 1 hole — for rigid E.M.T. and service entrance cable. Available in a full range of standard sizes. Malleable iron, hot dip galvanized.

**CORNER PULL-IN ELBOWS** — made in ½", ¾", 1", 1¼", 1½," and 2" sizes. Outstanding for space saving, machine wiring, easy wire pulling. Malleable iron, cadmium plated.

**NAIL STRAPS** — for rigid E.M.T. and S.E. cables with O.D. of .706 to 1.163 inches. In sizes ½", ¾", and 1". Malleable iron, cadmium plated.

**GEDNEY FITTINGS FIT**

**GEDNEY**
**ELECTRIC COMPANY**

GEDNEY

RKO BLDG. • RADIO CITY • NEW YORK 20
Foundry, Factory and Shipping Point: Terryville, Conn.

# CARCO

# Steel Light Poles

Carco standard transformer base poles have uniform anchor bolt spacing regardless of mounting height or length of anchor bolts. The above cut-away drawing shows this desirable standardization. Erection and plumbing are combined in one operation through placing an extra nut on each anchor bolt before setting pole. The adjustment of these nuts easily brings pole to plumb. Shimming is eliminated. Carco standard anchor base poles also have this important feature.




## Why Carco steel light poles are tops for western buyers

If you're a western buyer of street lighting equipment you'll want to know about Carco steel light poles. For Carco poles have earned such acceptance they now adorn the streets and boulevards of many cities in each of the eleven western states, Alaska and Hawaii. Meeting all the requirements of the I. E. S. street lighting code, Carco poles are graceful and handsome in appearance. Their design is so versatile that buyers find in them custom-built flexibility at mass-production cost. This versatility permits a wide latitude in mounting heights, bracket lengths and wiring. Having many important exclusive features that make for easy erection and maintenance, strength and permanence, Carco steel light poles are competitively priced. They can be delivered to your job without excessive freight costs or annoying delays. Inquiries are invited. Prices and specifications on special poles furnished on request.

*A copy of the new catalog on standard Carco Steel Light Poles will gladly be sent you on request. Just send your name and address to our Light Pole Division.*

**PACIFIC CAR AND FOUNDRY COMPANY**

**RENTON, WASHINGTON**

**STEEL LIGHT POLES, RAILROAD CARS, TRACTOR EQUIPMENT: Winches, Logging Arches, Log Carts, Dozers**
**STRUCTURAL STEEL FABRICATION AND ERECTION, STEEL CASTINGS, FORGING**

CARCO

it's time for a new meter...

when Mrs. Steele gets her all electric kitchen

When Mrs. Steele is busy in her all-electric kitchen, she uses many convenience outlet appliances at the same time. This often proves to be too much for a meter *not built* to measure modern loads.

The new Sangamo J2 Meter is designed to measure not only today's loads but the loads of the future because it has plenty of reserve capacity . . . straight-line accuracy up to 100 amperes.

Corrosion-resistant materials and finishes, an oilless, maintenance-free bearing system and low disk speed all add up to extra long life.

Choose the new Sangamo J2—the first . . . and finest . . . 15 ampere meter with 100 ampere capacity.

*A METER WITH STRAIGHT LINE ACCURACY*

*UP TO 100 AMPERES*

**SANGAMO**
ELECTRIC COMPANY
SPRINGFIELD, ILLINOIS

JM54-9

# DISTRIBUTION TRANSFORMERS

***different from others because.....***

# ...Stainless Steel Clamping Bands

## *prevent rust and corrosion . . . easy to put on and take off*

One-piece cover bands on cover, handhole cover, and bushings of General Electric distribution transformers are easy to remove for inspection or maintenance—and are just as easy to replace. Only a screwdriver is needed to loosen or tighten the one bolt which holds each band in place.

Exerting even pressure on nitrile gaskets, the clamping bands assure an airtight seal. This prevents oil contamination even after years of service and results in longer transformer life.

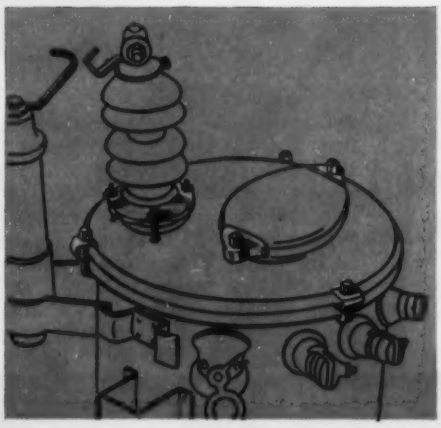
**CORROSION IS GREATLY REDUCED** by this new G-E design which eliminates bolt clamps and welded projections which can trap moisture and thus cause corrosion. In addition, all G-E bands and bolts (plus Belleville washers on the cover and low-voltage terminal clamps) are made of *stainless steel* to prevent corrosion. (The bands, however, are painted blue-gray to harmonize with the tank.) A coating of Neoprene rubber is vulcanized to the inside of each band to prevent its scratching the tank or cover and starting the corrosion cycle.

**REMEMBER** . . . all transformers are not alike . . . compare them all and see for yourself why General Electric is your best transformer buy.

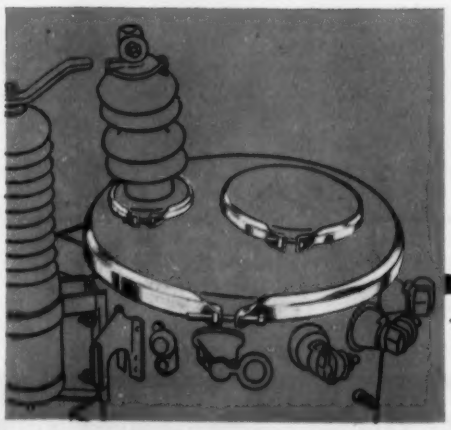
For more information on distribution transformers, either self-protected or conventional, contact your nearest G-E Apparatus sales office or agent, or write to General Electric Company, Section 431-16, Schenectady 5, New York.

*Progress Is Our Most Important Product*

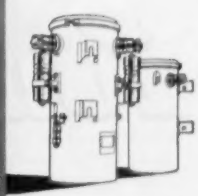
GENERAL ELECTRIC



**ORDINARY COVER** with bolt-clamps and other projecting surfaces of ordinary carbon steel offers many spots for rust and corrosion to set in.



**NEW G-E COVER** with its stainless-steel clamping bands has a clean functional design that gives maximum protection against corrosion.



*SELF-PROTECTED CONVENTIONAL

*"Take your choice G.E. makes both"*

No hard spots
WHY
YOUNGSTOWN BUCKEYE
CONDUIT IS BETTER
Youngstown is the one manufacturer who makes rigid steel conduit from ore to finished product. This enables Youngstown to control the complete manufacturing process—your insurance that each length of "Buckeye" is made of top-grade steel.

# Youngstown

QUALITY YOUNGSTOWN SERVICE

●On the job, electricians save time working with Youngstown Buckeye rigid steel conduit. That's because there are no hard spots to cause trouble. Whether threaded mechanically or by hand, Youngstown Buckeye assures you of clean, gripping threads, tight joints and perfect protection for wiring.

**THE YOUNGSTOWN SHEET AND TUBE COMPANY** *Manufacturers of Carbon, Alloy and Yoloy Steel*

General Offices: Youngstown, Ohio - Export Office: 500 Fifth Avenue, New York 36, N. Y.

SHEETS - STRIP - PLATES - STANDARD PIPE - LINE PIPE - OIL COUNTRY TUBULAR GOODS - CONDUIT AND EMT - MECHANICAL TUBING - COLD FINISHED BARS - HOT ROLLED BARS - BAR SHAPES - WIRE - HOT ROLLED RODS - COKE TIN PLATE - ELECTROLYTIC TIN PLATE - RAILROAD TRACK SPIKES

# New RPM 10-30 Special Motor Oil can save up to ¾ gallon of gasoline in every 5 gallons you buy

Now...a motor oil so superior it can save up to ¾ gallon of gas in every 5 ...a heavy-duty motor oil so far ahead that just one grade serves all cars and light trucks, all year 'round, in all climates. Proved in the toughest stop-and-go driving, easier-starting "RPM" 10-30 Special saves you money, saves engine wear, boosts performance. Start saving today with RPM 10-30 Special Motor Oil.

**CAN BOOST GAS MILEAGE UP TO 15%**—more miles per gallon in tough stop-and-go driving.

**DESIGNED FOR OLDER CARS AS WELL AS NEW**—covers all car manufacturers' motor oil recommendations.

**LESS OIL CONSUMPTION**—savings as high as 33% compared to light grade oils.

**TOPS FOR HYDRAULIC VALVE LUBRICATION**—cuts noise and sticking.

**STEPPED-UP POWER**—for better acceleration, more pull on hills.

**EASIER STARTING**—battery-saving starts in all weather.

**MONEY-SAVING MOTOR PROTECTION**—tops for preventing wear of critical engine parts.

**ONE OIL FOR ALL PURPOSES**—covers SAE grades 10W, 20W, 30; recommended for all seasons, all climates.

10-30 SPECIAL RPM MOTOR OIL

*Certified*

This is to certify that we have made our own investigation of RPM 10-30 Special Motor Oil. Our findings confirm the above claims regarding the qualities of "RPM" 10-30 Special.

THE TWINING LABORATORIES

By Fred W. Twining

**STANDARD OIL COMPANY OF CALIFORNIA**

CORONA *free* DESIGN

# Stretches

## HERE'S A TRANSFORMER THAT WILL STAY YOUNG

CORONA AGES TRANSFORMERS prematurely, produces local heat and chars insulation. Eventually insulation becomes a conductor, causing transformer failure.

Corona-free design of Allis-Chalmers power transformers means that corona will never cut into this transformer's life. The harmful effect of corona will never reduce return from this transformer investment.

### *Economical* FORCED OIL COOLING

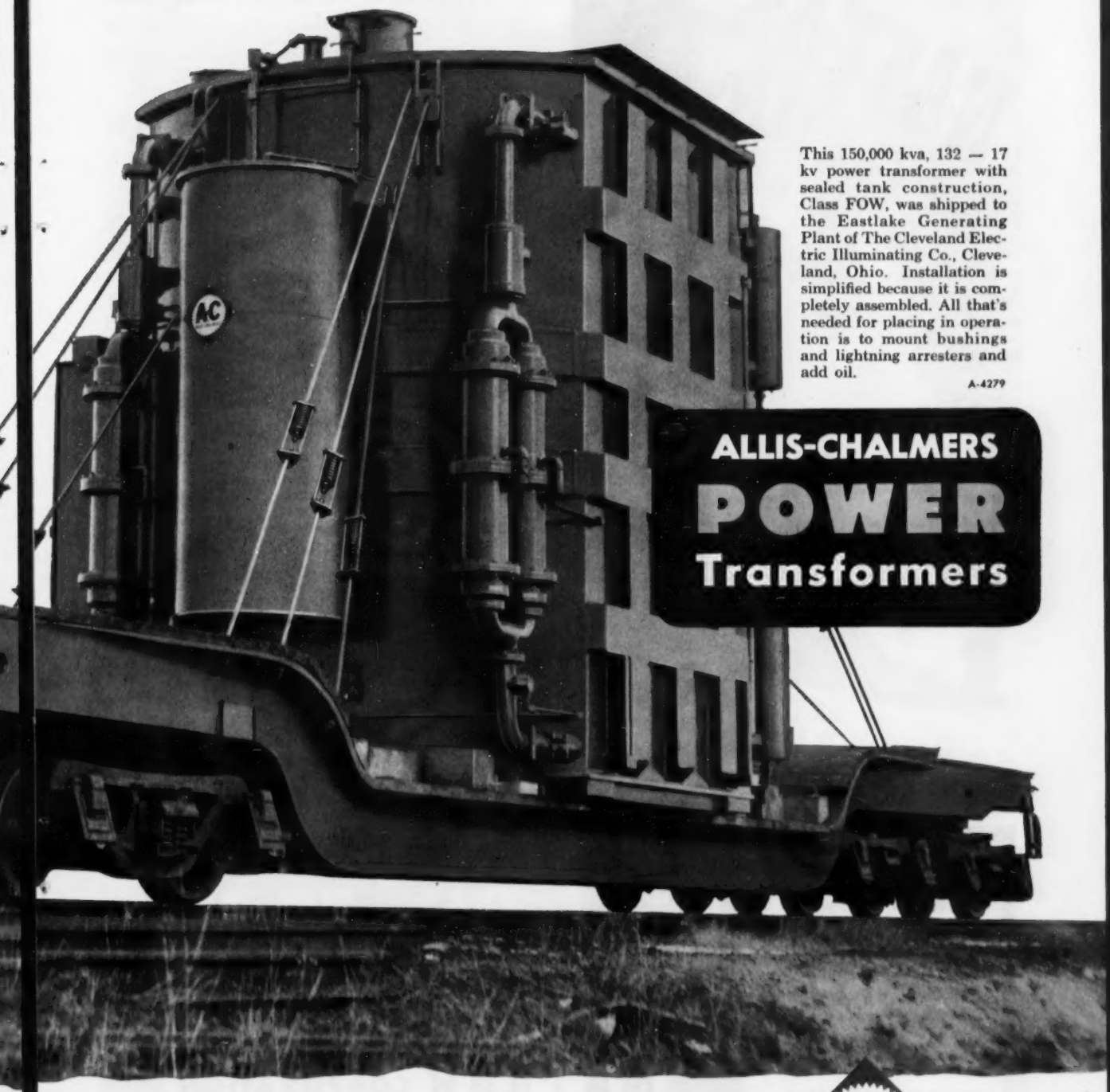
In this transformer, two *Electro-Cooler* units (visible on left side of transformer) remove warm oil from the top of the transformer tank, circulate it through water-cooled heat exchangers, and return it to the lower portion of the tank. Forced oil cooling of power transformers was first made economical by Allis-Chalmers development of the *Electro-Cooler.*

The *Electro-Cooler* is an entirely self-contained, self-supporting, and self-lubricated oil-immersed motor and pump on a single shaft. It is totally enclosed in a single casing and sealed. Two ball bearings support both pump and motor. There are no glands, stuffing boxes, or oil leaks. The three-phase squirrel-cage motor has no starting brushes, no commutator, or other wearing parts.

Electro-Cooler is an Allis-Chalmers trademark.

**ALLIS-**

# Investment Dollars



This 150,000 kva, 132 — 17 kv power transformer with sealed tank construction, Class FOW, was shipped to the Eastlake Generating Plant of The Cleveland Electric Illuminating Co., Cleveland, Ohio. Installation is simplified because it is completely assembled. All that's needed for placing in operation is to mount bushings and lightning arresters and add oil.

A-4279

**ALLIS-CHALMERS**
**POWER**
**Transformers**

# CHALMERS

A-C ALLIS-CHALMERS

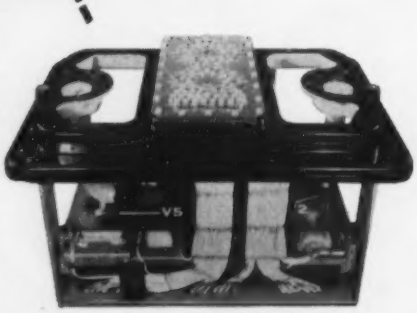
MILWAUKEE 1, WISCONSIN

Few, if any, are the names in the electrical industry that are more *widely* known internationally than Siemens. Certainly none are more *favorably* known for the excellence of their products.

At the Siemens-Reiniger-Werke A. G. in Erlangen, Germany, construction materials are carefully tested and selected, particularly for such equipment as X-Ray apparatus which is expected to operate satisfactorily for many years with little or no maintenance. Natvar 400 Extruded Vinyl Tubing is used to insulate and protect leads of X-Ray transformers because of its uniformly good electrical and mechanical characteristics and its resistance to heat and oil.

If you need insulating materials with exceptionally good properties, you can depend on Natvar flexible insulations. They are available either from your wholesaler or direct, and are the same no matter when or where purchased.

Interior view of a 125 kv transformer used in X-Ray equipment manufactured by Siemens-Reiniger-Werke A. G. It is an oil immersed type and operates from a 380 volt AC power source. Primary leads are insulated and protected with Natvar 400 Extruded Vinyl Tubing which retains its excellent electrical and mechanical properties in spite of heat and oil.



Natvar

**Natvar Products**

- Varnished cambric—cloth and tape
- Varnished canvas and duck
- Varnished silk and special rayon
- Varnished—Silicone coated Fiberglas
- Varnished papers—rope and kraft
- Slot cell combinations, Aboglas®
- Vinyl coated—varnished—lacquered tubing and sleeving
- Extruded vinyl tubing and tape
- Styroflex® flexible polystyrene tape
- Extruded identification markers

*Ask for Catalog No. 23*

**NATVAR CORPORATION**

FORMERLY THE NATIONAL VARNISHED PRODUCTS CORPORATION

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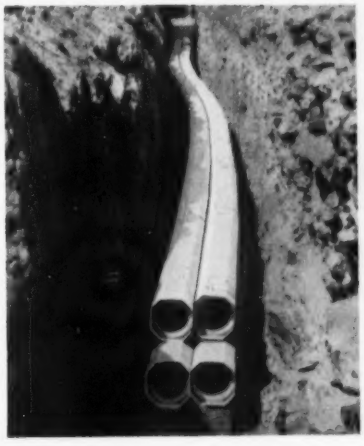

**Using streamlined construction techniques, OCT-O-DUCT conduit . . .**

# 900 to 1600 Trench-feet a Shift Became Routine on This Job

Thirty miles of 4-way and 6-way underground conduit in a single stretch south of San Jose, Calif., may be a record in itself. But contractors on the job agree that plenty of duct erection records were set. One crew laid 1600 trench-feet of 4-way duct structure in one working day—with only a regular 3-man erection team.

Well conceived specification by the utility, good planning by the contractors involved, and superior features of the new OCT-O-DUCT combined to make this record installation. The field-engineered features of the new flat-sided conduit proved out in this system which involved over 700,000 feet of duct.

Conduit was delivered from factory to trench-side just ahead of trencher. Laying crew followed close behind. One man attached couplings to stacked lengths; another passed pieces to man in trench who easily erected either 4-way or 6-way runs, as specified. 900 to 1600 trench-feet per shift became routine on this job.

### What Contractors Liked

These features impressed contractors: Flat sides of OCT-O-DUCT eliminated spacer problems—convenient length permitted easy handling by one-man in deep, narrow trenches—simple, sturdy collar type coupling required on special tools in the field—the impressive strength of new OCT-O-DUCT—trench side delivery.

Man-holes were cast in place around prefabricated portable frames. Eart chonditions for the most part were ideal, little or no shoring was required during pouring of concrete encasement. System was ready for cable within two months of starting construction.

### Real Circuit Protection

The utility whihc designed this system knew from experience that smooth Soapstone conduit had unsurpassed electrical and chemical characteristics for permanent circuit protection. It had learned before that Soapstone is hte most satisfactory and least expensive duct system. The speed of laying which moved this job ahead of schedule was an additional plus value. So was the lower cost per trench-foot bid by contractors on later sections of the job after they found what they could do with Soapstone OCT-O-DUCT.

If you are not using OCT-O-DUCT on your underground duct jobs you may not be getting the best circuit protcetion your money can buy.

### New Installation Manual

A brand new OCT-O-DUCT Installation Manual is available for the asking. This incorporates much of the experience on the 30-mile system descriebd here, plus hte best of the know-how of electric and telephone utilties, municipal and industrial users of Soapstone conduits over the past quarter-century. Send for a copy today. Write:

**SOAPSTONE DUCT COMPANY**
110 Linfield Drive, Menlo Park, California
**Distributed in the West By**
**MAYDWELL & HARTZELL, INC.**
San Francisco · Los Angeles · Phoenix
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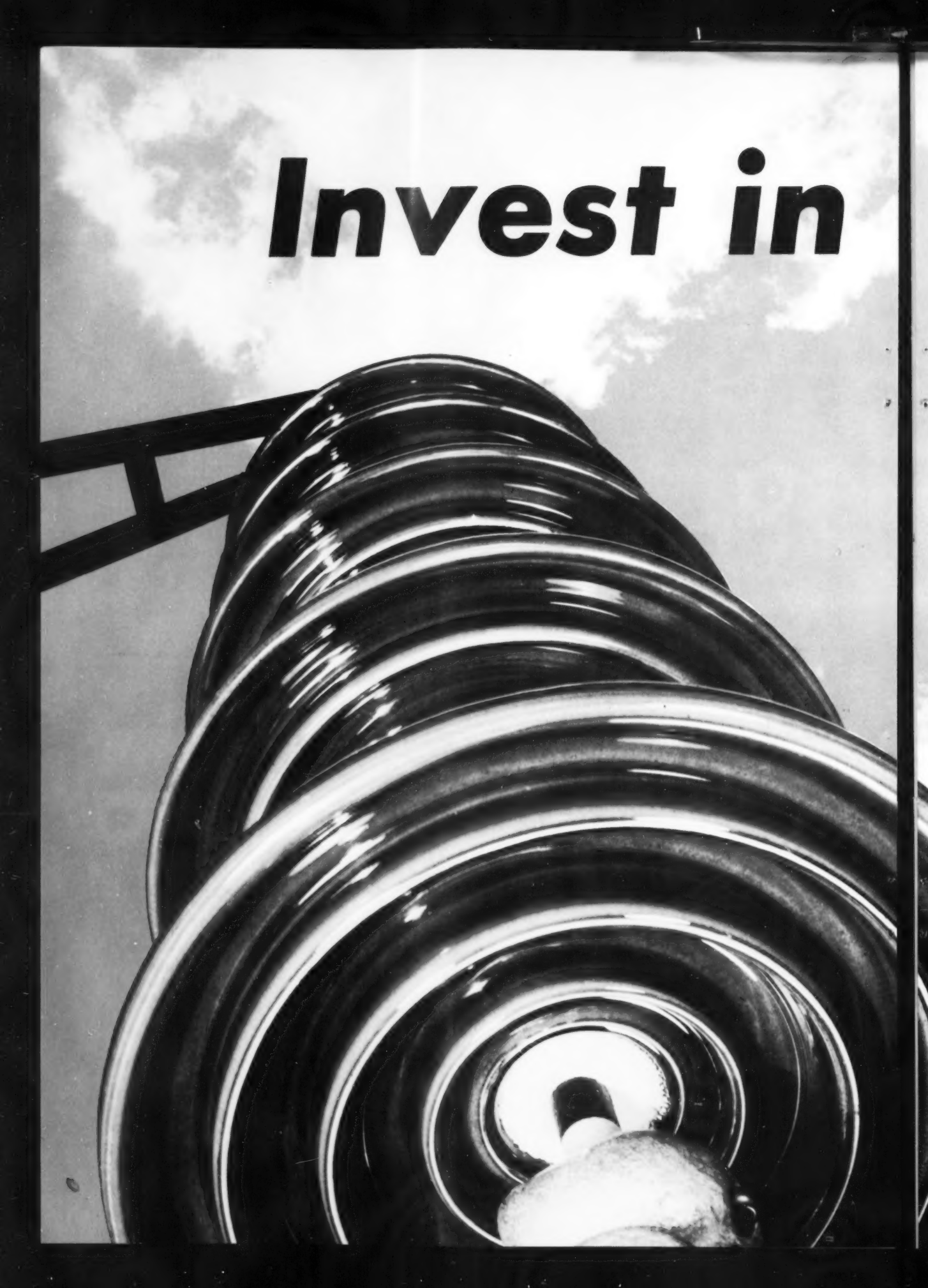

Invest in

# Protection

against mechanical impact

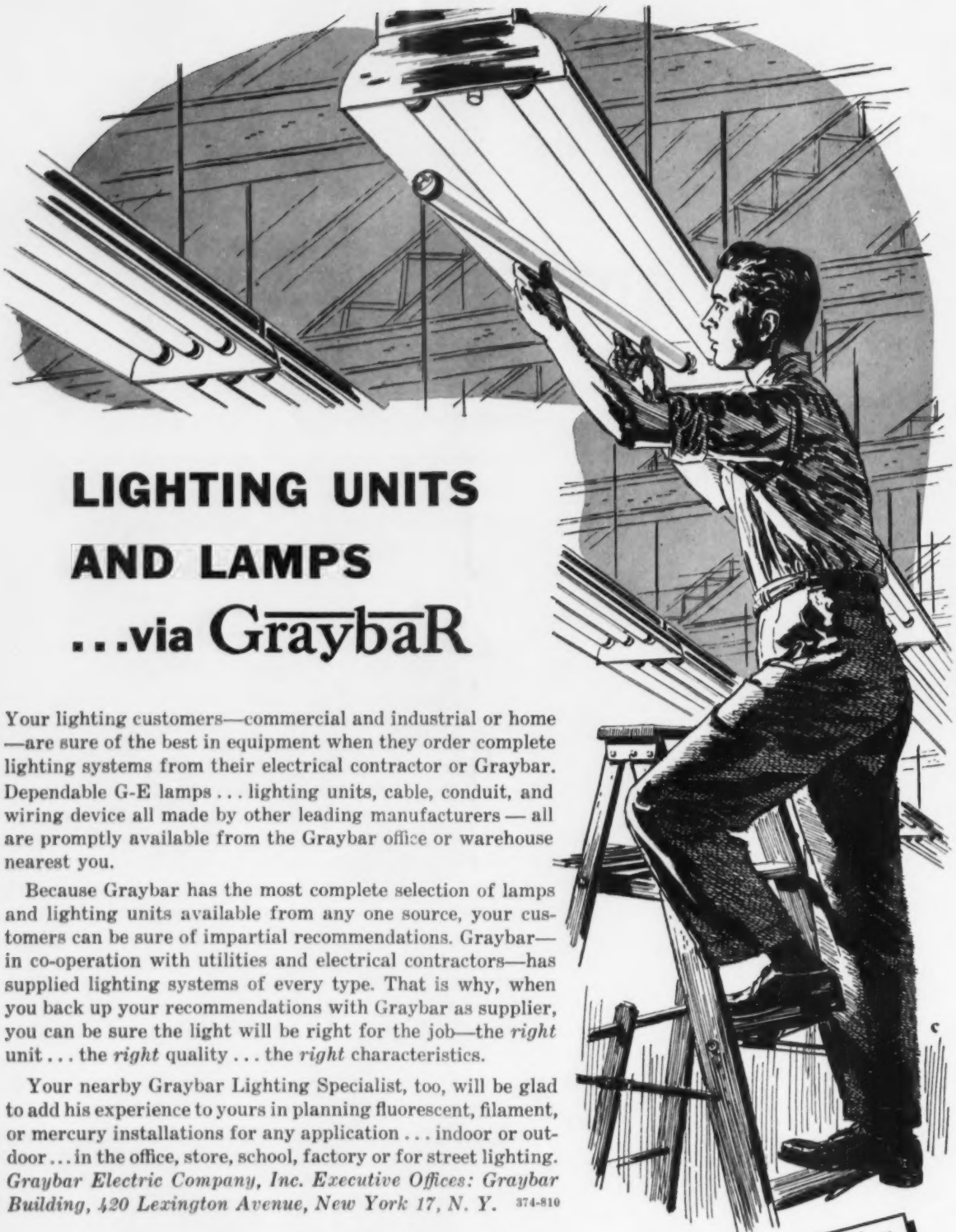
Get Locke **MICROGLAZE***

Suspension Insulators

**LOCKE**

LOCKE DEPARTMENT
GENERAL ELECTRIC COMPANY
BALTIMORE, MARYLAND

*Trademark of General Electric Company



# LIGHTING UNITS AND LAMPS ...via GraybaR

Your lighting customers—commercial and industrial or home—are sure of the best in equipment when they order complete lighting systems from their electrical contractor or Graybar. Dependable G-E lamps . . . lighting units, cable, conduit, and wiring device all made by other leading manufacturers — all are promptly available from the Graybar office or warehouse nearest you.

Because Graybar has the most complete selection of lamps and lighting units available from any one source, your customers can be sure of impartial recommendations. Graybar—in co-operation with utilities and electrical contractors—has supplied lighting systems of every type. That is why, when you back up your recommendations with Graybar as supplier, you can be sure the light will be right for the job—the *right* unit . . . the *right* quality . . . the *right* characteristics.

Your nearby Graybar Lighting Specialist, too, will be glad to add his experience to yours in planning fluorescent, filament, or mercury installations for any application . . . indoor or outdoor . . . in the office, store, school, factory or for street lighting. *Graybar Electric Company, Inc. Executive Offices: Graybar Building, 420 Lexington Avenue, New York 17, N. Y.* 374-810

*Call Graybar first for...*

"GraybaR Everything Electrical "GraybaR ELECTRIC COMPANY

Since 1869 * REG. U.S. PAT. OFF.

IN OVER 100 PRINCIPAL CITIES

Every pound *helps haul itself* on these advanced FWD trucks. That's because it's "working weight." Improved Math-Matic Design—*exclusive* on FWD's—correctly proportions power to weight on front and rear axles. Each wheel's load makes it *grip harder*, using every ounce of power for greater controllable traction *on* or *off* the road.

From 30 to 37% longer tire life* . . . up to 82% more tractive ability* . . . safest by far to operate under *any* driving conditions* . . . all these extra values without extra fuel consumption—here are dollar and *sense* reasons why *you* should get full facts immediately on this greatly advanced line of heavy-duty trucks. Four-wheel-drive and six-wheel-drive models for any "truck-killing" job

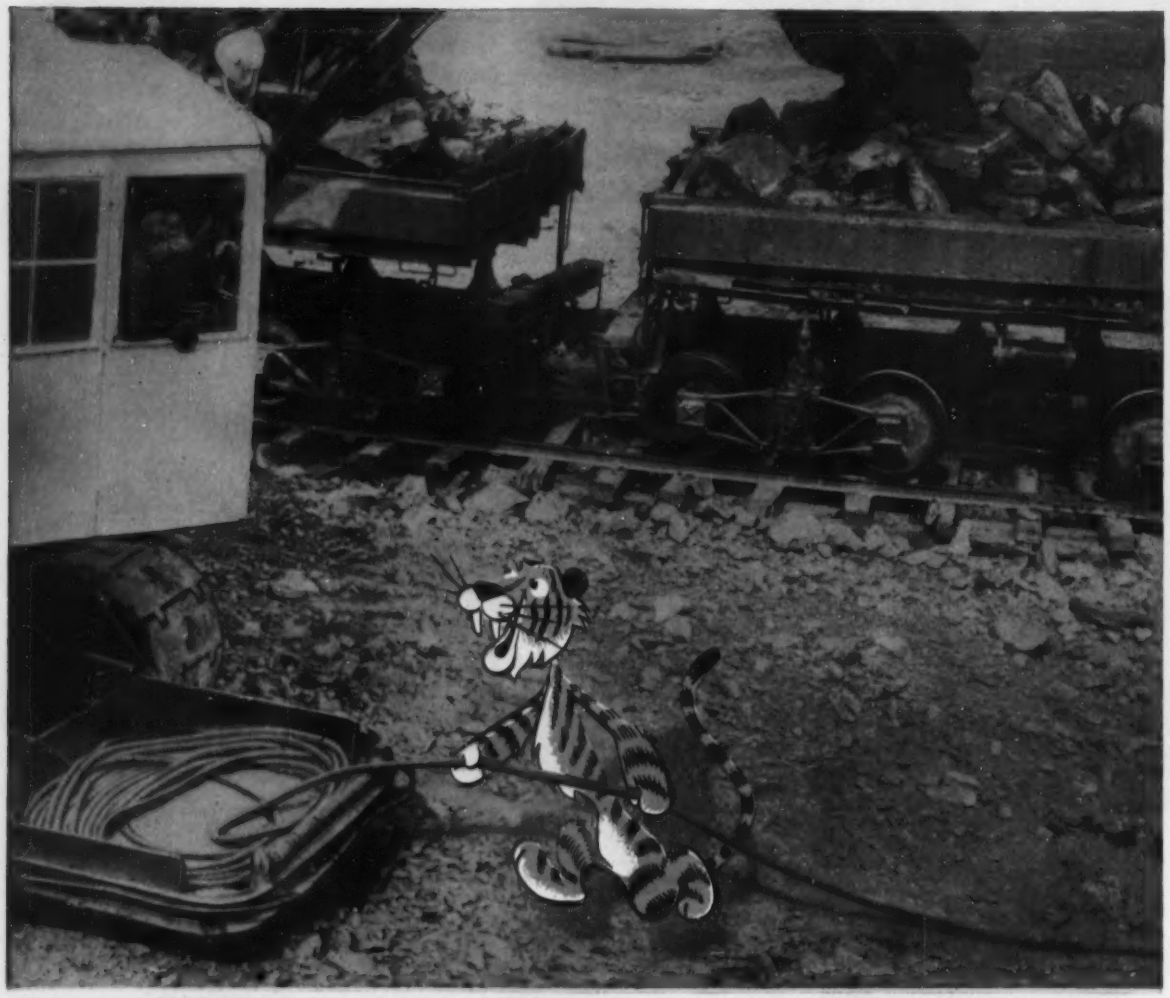
- ★ **Greater power-weight ratio, higher RPM, thru new engine design!**
- ★ **Lower maintenance costs because of standardized parts!**
- ★ **Larger legal payload thru better weight distribution!**
- ★ **New comfort—convenience—safety in completely redesigned cab!**

*TRUCK RESEARCH PROJECT CONCLUSIONS
*Write now for your free copy of "The Truck That Went To College."*

FWD BUILDERS OF AMERICA'S FOREMOST HEAVY-DUTY TRUCKS

**THE FOUR WHEEL DRIVE AUTO COMPANY,** CLINTONVILLE, WISCONSIN, *Canadian Factory,* KITCHENER, ONTARIO

# "Our *Tiger Brand*



**NOTICE THE CABLE TRAY** fastened to the shovel. This was developed by Universal Atlas for easier cable handling.

**TWO WORKMAN WATCH** from blast shelter as charge is set off in distance. Low horses cushion cable from shock of falling rock.

**HERE A CABLE** is raised on horses to clear the railroad track. It feeds the shovel visible in background.

# *Amerclad* lasted 12 years"

### Says Chief Electrician, Hudson Plant
***Universal Atlas Cement Company***

Year after year, at this quarry, the Amerclad is exposed to knife-sharp fragments of flying rock. During the summer, the rock often gets so hot that you can't even touch it. Other times, the cable lies out in the rain and snow—often at sub-zero temperatures.

At the Hudson, N. Y. quarry of Universal Atlas, Chief Electrician Frank Rodmond said, "This Amerclad runs the constant danger of being hit with flying rock fragments through secondary blasting. Yet the down-time cost of this operation is so high that we just can't stand cables that keep failing. We kept that last batch of Amerclad 12 years before we replaced it, yet it was still serviceable when we switched over to new Amerclad."

If you want service like this, specify Amerclad the next time you need cable that can really take it. Amerclad is available in a great many sizes and constructions, with or without shielding. There is a type to power anything from a river dredge or mine locomotive down to a rough and tumble electric hand drill. *Send the coupon,* and get more information.

**AMERICAN STEEL & WIRE DIVISION**
**UNITED STATES STEEL CORPORATION**
**GENERAL OFFICES: CLEVELAND, OHIO**
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

**THIS IS A TYPICAL DRILL.** It uses a 4-conductor No. 8 Amerclad cable.

## A STANDARD TIGER BRAND CABLE FOR EVERY SPECIAL JOB!

paper & varnished cambric cable
asbestos wire and cable
aerial, underground & submarine cable
mold cured portable cord
machine tool & building wire
special purpose wire & cable
shovel & dredge cable

—SEND THE COUPON—

American Steel & Wire Division
Room JE-104, Rockefeller Building
Cleveland 13, Ohio

☐ Please give me more information about Amerclad.
☐ I'd like to talk to your representative.

Name .....
Firm .....
Address .....
City ..... State .....

***U-S-S Tiger Brand*** ELECTRICAL WIRE & CABLE

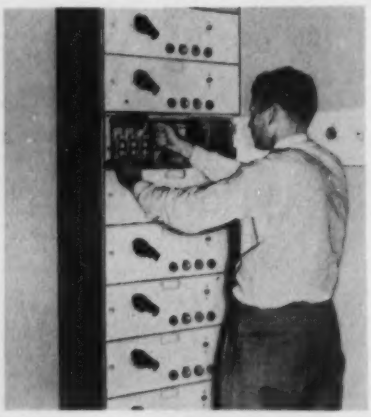
USS

UNITED STATES STEEL

# PRODUCT NEWS

## Motor Control Centers

*(1) General Electric Co. Distribution Assemblies Department, Plainville, Conn.*



Compact design is a feature of a new line of motor control centers claimed to save up to 50% in floor space. The DA7093 will take nine NEMA size 1 starter units or six NEMA size 2 units in the standard 90-in. trough without reduction in pull-box space. Starter units will be of fusible or circuit-breaker type. Center busing arrangement frees pull-box space for wiring and increases vertical bus capacity from 300 to 600 amp, it is stated. This same arrangement also makes available continuous main buses of 600 or 1,200 amp capacity in standard construction up through five sections. The trough is designed to take straight-in wiring to main lugs.

A separate insulator is furnished for each bus. Main buses are mounted in an edge-to-edge arrangement and vertical bus bars are spaced on 5-in. centers. Newly designed split type B terminal blocks allow starter units to be removed or inserted without disturbing established wiring. Across-the-hinge wiring to push buttons and indicator lights has been eliminated, it is stated; push buttons are mounted on the unit door and when pressed actuate the contacts by means of plunger-type extensions. As a safety feature a new method of grounding has been developed.

Each standard section measures 13½ in. deep and 24 in. wide. The control center is made in NEMA 1 or 1A enclosures and NEMA type A, B and C construction is available.

## Splicing Tool Improved

*(2) Buchanan Electrical Products Corp., Hillside, N. J.*

An improved lighter weight model of its C-24 hand-operated tool for splicing and terminating circuit wiring has been announced by this manufacturer. It has a 20% reduction in tool head thickness and a 20% reduction in over-all weight; is said to have a better balance that permits use for longer periods with less effort and fatigue than with the previous model. It has a four-way crimping action and splices various combinations of stranded or solid wires, or both, from two No. 18 to three No. 8 or two No. 6 with two sizes of all-copper splice caps. Vinyl insulators for splice caps offer fixed insulation protection for all splices, it is stated. Open or closed end splice caps, vinyl insulators and Termend lugs are UL and CSA approved. Insulators are approved for 75 C operation at 600 v in general applications and 1,000 v in fixtures.

**Fill in Coupon on Page 62**

## Cord for Portable Equipment

*(3) United States Rubber Co., Rockefeller Center, New York 20, N. Y.*

For use with power saws, drills and similar types of portable equipment, a new electrical cord is claimed to have long-wearing qualities. Reasons for cord failure were determined in more than 10,000 laboratory and field tests before designing the new cord. On the basis of tests of more than 1,000 cords, the Royal Master portable cord is rated more than three times as resistant to wear as low-priced cords made by the continuous vulcanization process and 88% stronger than high quality molded cords in use, the manufacturer claims.

## Single-Phase Meter

*(4) Duncan Electric Mfg. Co., Lafayette, Ind.*

Designed to give more kva of capacity to handle greater loads without sacrificing performance at lighter loads and without increase in basic price, this new type MK single-phase meter is nominally rated at 15 amp; has extended range capacity to meter continuous loads to 100 amp.

Maximum temperature rise of the current coil is approximately 50 C with a load of 100 amp when installed in a standard pan-type socket such as the manufacturer's type C. Temperature rise at the socket jaws under these conditions is only 40 C, it is stated. Mechanically clamped or bolted joints have been eliminated in the new design.

Arc gaps, plus improved insulation, protect the meter against lightning discharges. The gaps are adjusted to flash over at approximately 4,500 v rms.

The basic watt-hour constant of .6 was selected to facilitate widening the load range and to aid in standardization of constants, it is stated. The new 15-amp MK, operating near maximum capacity of 100 amp, will have a disk speed approximately 10% lower than the superseded type MF at its maximum capacity of 60 amp, the manufacturer points out.

Many of the features of the manufacturer's line have been continued in the MK design, including the Alnico damping magnet, microset adjustments and elimination of mechanical adjustments.

# 3500 C for 30 Seconds

## This Molded Current Transformer Meets Fire Test

Photo shows Type TWM current transformer after application of 3500 C for 30 seconds. The resin extinguished itself immediately. Charring occurred to depth of 1/16 inch, but beneath this depth the resin was still solid.

ALLIS-CHALMERS **Instrument Transformers**

Allis-Chalmers thru-type molded current transformers can cause no fire hazard. Recent tests prove they will not support combustion or add to the intensity of a fire — an important thing to look for in a current transformer.

### Hold More Conductors

Allis-Chalmers thru-type molded resin transformers hold more conductors than any other thru-type current transformer of corresponding rating now on the market. The oval window is large enough to hold two 500 MCM stranded conductors for any current rating in the 600-volt insulation class.

### High Metering Accuracy

These transformers provide accuracy with the burden of one or more watthour meters. They are manufactured in four primary current ratings, with intermediate ratings available by passing the primary conductor through the window two or more times. Installation is simple and maintenance has been completely eliminated — no painting is required. Get complete facts from your nearby A-C office or write Allis-Chalmers, Milwaukee 1, Wisconsin, for Bulletin 61B8080. A-4385

# ALLIS-CHALMERS

Outdoor current transformers, Type KO, rated up to 15 kv and 1800 amp.

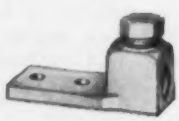
Indoor potential transformers, Type PD, rated up to 14,400 volts, 200 va, fused or unfused.

Outdoor potential transformers, Type PWD, rated up to 15 kv, 200 va.

**Over 400 Types and Ratings**

# What you EXACTLY

YOU never alter a job to suit the fittings, when using Penn-Union. You get EXACTLY RIGHT fittings . . . promptly. Below are some of the Penn-Union Vi-Tite Lugs you can order from stock (and there are many more). Any can be furnished with hex-head screws instead of socket screws.



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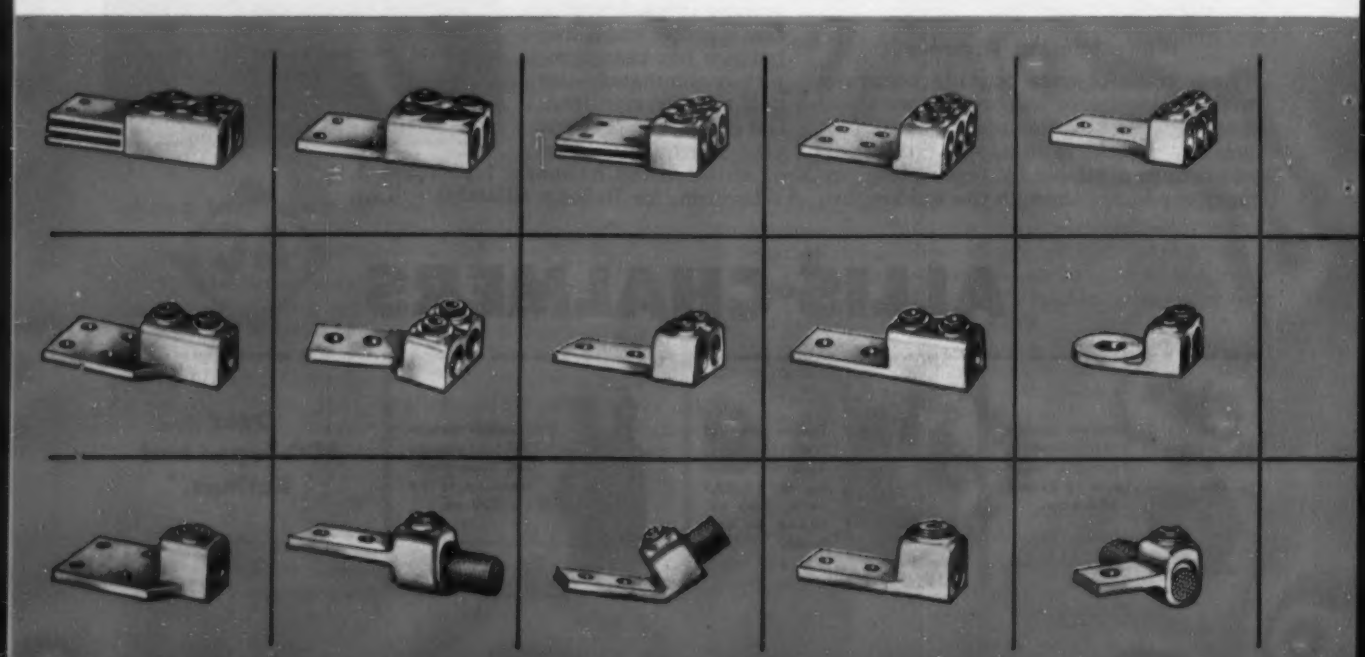
F. M. NICHOLAS CO., 714 Harrison St., SAN FRANCISCO.
KENNETH ANDERSON CO., 412 Seaton St., LOS ANGELES
and 1503 S. First Ave., PHOENIX.



# need

## PENN-UNION

Penn-Union Electric Corporation • Erie, Pa.

Please send details of your complete line of Vi-Tite Lugs.

(Name)_____

(Company)_____

(Address)_____

## Guard

*(5) Hubbard & Co., 6301 Butler St., Pittsburgh 1, Pa.*

This transformer guard fits over any type of transformer bushing and approximately doubles the distance from hot to grounded parts, greatly reducing the danger of birds or animals shorting out the bushing, according to the manufacturer. It is funnel shaped, formed of wet process porcelain, brown glazed.

## Breakers

*(6) Cutler-Hammer Inc., 315 N. 12th St., Milwaukee 1, Wis.*

A new line of circuit breaker load centers for wiring protection in buildings of all sizes combine thermal and magnetic trip, quick make and break, trip-free operation, ambient compensation and two-position on-off lever movement, according to the manufacturer. The Unit Breaker is calibrated at the factory and the individual breakers are made tamperproof by factory sealing, it is stated.

The three-unit construction consists of a case with current-carrying bus bars, breakers and cover. The breakers come in single-pole units with 15- or 20-amp ratings, double-pole breakers with 15-, 20-, 30-, 40- or 50-amp ratings. The complete line includes single-phase, three-phase and split-bus devices; lug mains or breaker mains; general-purpose or raintight enclosures; covers for flush or surface mounting.

## Meter

*(7) The Jackson Electrical Instrument Co., 18-30 S. Patterson Blvd., Dayton 2, Ohio.*

Electrical lines and cable circuits can be traced by one man with the Trace-O-Meter, according to its manufacturer. The electrician slips a tagged jumper to each circuit at the remote end of the line; then touches the wires at the other end with the probe. As each circuit is touched, the meter indicates the correct number as tagged by the jumper. Nine wires can be identified.

## Inhibitor

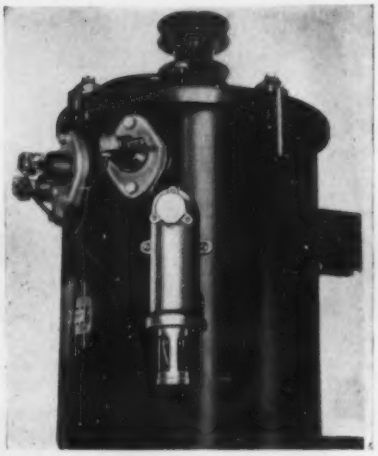
*(8) Shell Oil Co., 50 W. 50th St., New York 20, N. Y.*

A new volatile corrosion inhibitor, VPI-250, is claimed to give quick protection. According to the manufacturer, portions of this crystalline amine nitrite compound volatilize very rapidly and will prevent rust almost immediately, while some of the constituents evaporate more slowly for longer lasting protection.

The new material is said to flow more freely than any previously made. It is a white powder about as fine as talcum, will not clog a flocking gun and can be applied with a squeeze bottle, salt shaker or similar device, the manufacturer states. Where spraying or dusting is impractical, the powder may be dissolved in alcohol and applied in solution.

The material does not have to be applied directly to the surface it is to protect; does not have to be removed from equipment before it is placed in operation. Small items can be removed from the protected atmosphere, used and then replaced without need for additional rust-preventive measures, it is pointed out.

(For More Data, Use Coupon, Page 62)



## Overload Indicator

*(9) Line Material Co., Milwaukee 1, Wis.*

An ambient-compensated transformer overload indicator provides visible indication by means of a drop-down red light or a drop-down luminescent tube. It was designed for installation on transformers in service or for integral factory mounting on new transformers.

It is factory adjusted to indicate an overload when the transformer winding hot spot temperature reaches approximately 95 C. It consists of a tank wall heat receiver and an ambient temperature receiver mounted in a molded phenolic resin housing. Transformer tank wall temperature and ambient temperature are registered. The integrated effect of these two factors is used to determine when indication will be made.

When the red light indicator is used, a two-conductor cable is furnished for connection to the 120-v transformer terminals. The cable has an 18,000-v BIL; the indicator has the same BIL as the transformer secondary.

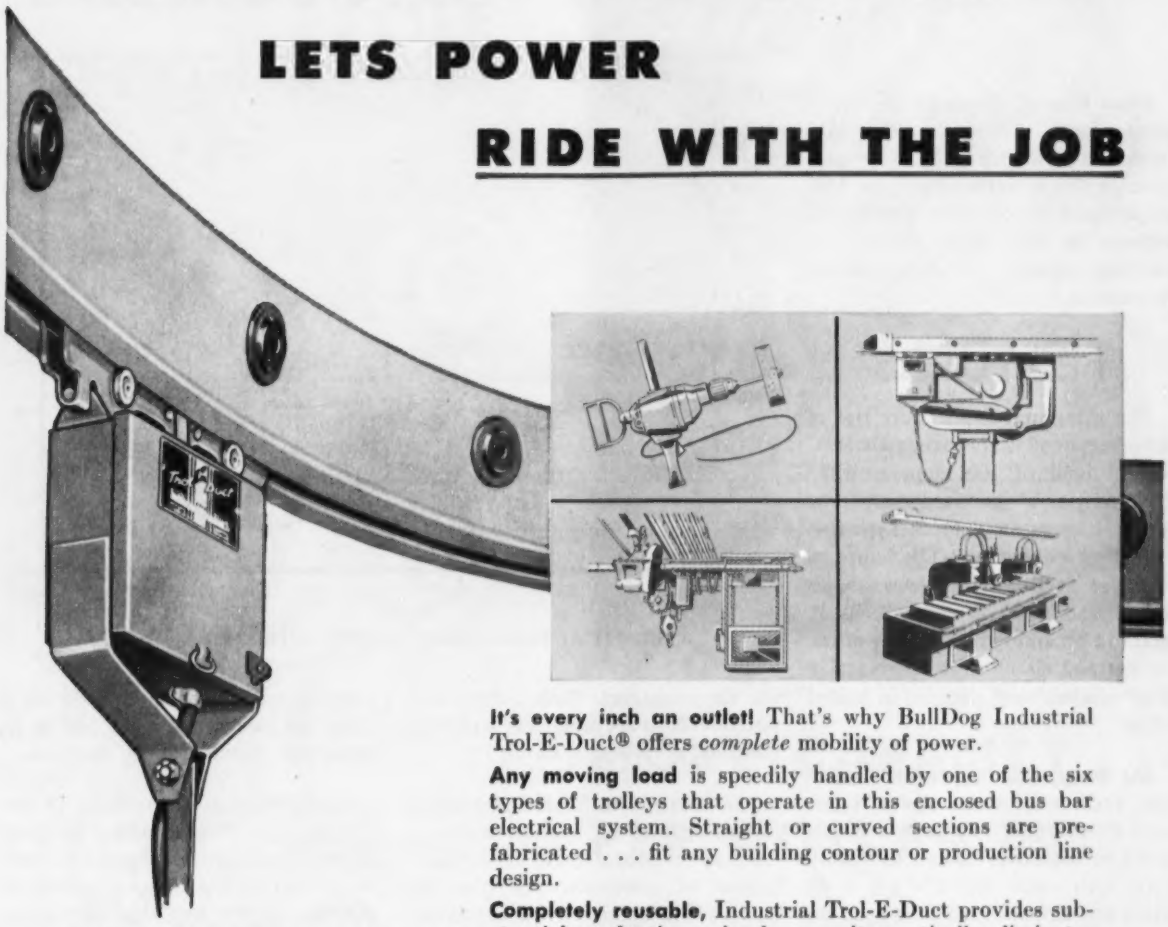
## Offset Connector

*(10) Gedney Electric Co., RKO Bldg., Radio City, New York 20, N. Y.*

A new offset connector for threaded rigid conduit was designed to save installation time. It is made of malleable iron; is cadmium plated; comes in a range of sizes from ½ in. to 2 in.

# BULLDOG INDUSTRIAL *Trol-E-Duct*

## LETS POWER RIDE WITH THE JOB



National Electrical Week, Oct. 18-24, 1954

**It's every inch an outlet!** That's why BullDog Industrial Trol-E-Duct® offers *complete* mobility of power.

**Any moving load** is speedily handled by one of the six types of trolleys that operate in this enclosed bus bar electrical system. Straight or curved sections are prefabricated . . . fit any building contour or production line design.

**Completely reusable,** Industrial Trol-E-Duct provides substantial production gains because it practically eliminates "downtime." Trolleys can be removed and replaced without current shut-down . . . no sagging wire conductors to halt production for maintenance. There's no more time wasted hunting for a free outlet . . . no more messy, dangerous extension cords.

**Industrial Trol-E-Duct** is another thoroughbred BullDog product designed to provide matchless economy with highest efficiency and flexibility. Write today for free Bulletin IT-655. BullDog Electric Products Company, Detroit 32, Michigan. *Export Division:* 13 East 40th Street, New York 16, New York. *In Canada:* BullDog Electric Products Company (Canada), Limited, 80 Clayson Road, Toronto 15, Ontario.

©BEPCO

**BULLDOG**
**ELECTRIC PRODUCTS COMPANY**

*A Division of I-T-E Circuit Breaker Company*

**CONSULT THE FOLLOWING PACIFIC COAST REPRESENTATIVES:**

Coast Electric & Manufacturing Co., 1733 N.E. Seventh Avenue, Portland 12, Ore. • BullDog Electric Products Co. of Los Angeles, 2885 E. Washington Blvd., Los Angeles 23, Calif. • Safety Switchboard Company, 910—89th Avenue, Oakland 21, Calif. • Young Electric & Mfg. Co., 2134 Curtis St., Denver 2, Colo.

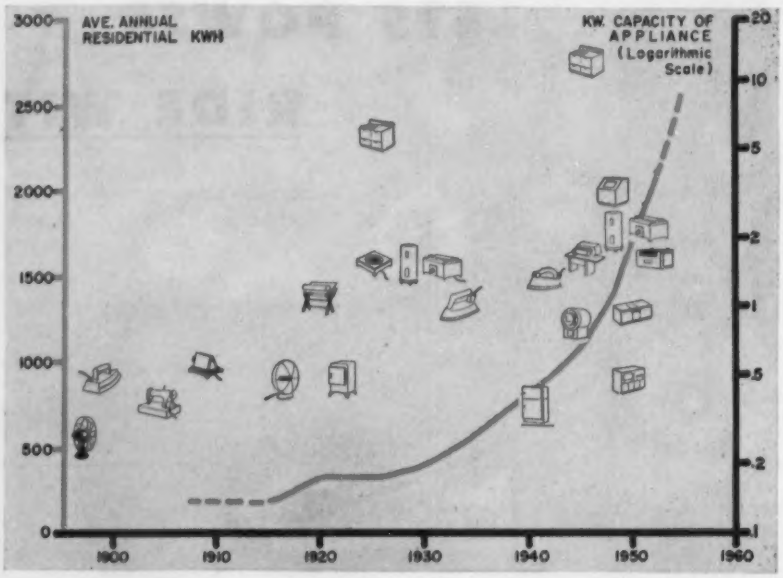
# METERING DEVELOPMENTS

**More Kva of Capacity** to handle greater loads, without sacrificing performance at lighter loads, is the purpose of the new Duncan Type MK singlephase meter. This, *without an increase in basic price, means more metering capacity per dollar* capital investment.

## FEATURES

The maximum temperature rise of the current coil is approximately 50°C with a load of 100 amperes when installed in a standard pan type socket, such as the Duncan Type C—#2 copper conductors. The temperature rise at the socket jaws, under these conditions, is only 40°C. A factor in obtaining the capacity of the current coil circuit is the elimination of all mechanically clamped or bolted joints.

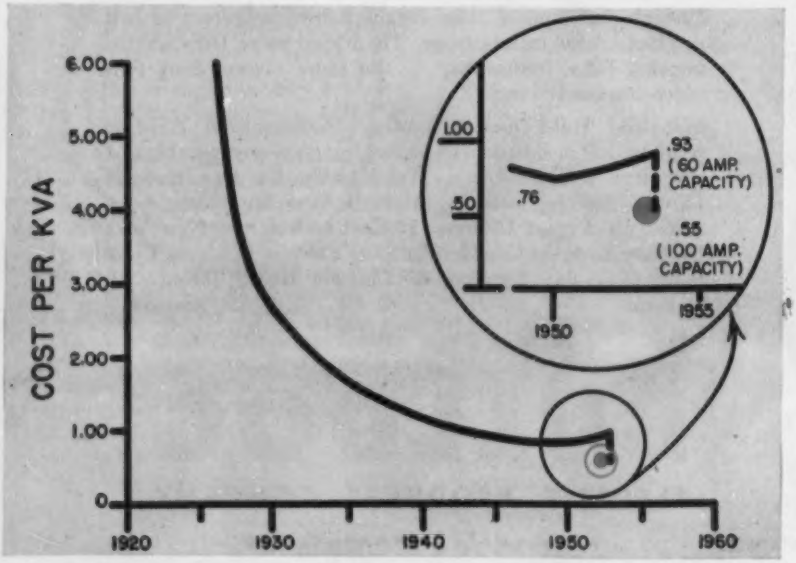
**Arc Gaps, Plus Improved Insulation,** protect the meter against lightning discharges. The gaps are adjusted to flash over at approximately 4,500 volts r.m.s. (6.5 KV 1½ x 40 micro sec. impulse) which is approximately 50% of the insulation level of the electromagnet. Both current and potential coils are molded in high temperature polyvinyl chloride.




RESIDENTIAL LOAD GROWTH AND APPLIANCE DEMANDS

**The Basic Watthour Constant of .6** was selected to facilitate widening the load range and to aid in standardization of constants. The new 15-ampere MK, operating near maximum capacity—100 amperes—will still have a disc speed approximately 10% lower than the superseded Type MF at its maximum capacity of 60 amperes.

**Many Features Continue** in the Duncan MK design: *Alnico damping magnet*—originally introduced in watthour meters by Duncan—resists changes due to lightning discharges (less than ¼ of 1% calibration change with discharge current even in excess of 50,000 amperes); top bearing is a K-monel pin with a carbon graphite ring; lower bearing is time proven jewel and ball combination; *no mechanical adjustments*—bearings tighten against fixed shoulders to insure proper location of disc, and worm wheel is fastened to frame to insure proper mesh; convenient register reset; *microset adjustments*—all accessible from the front and operated with a standard screwdriver.



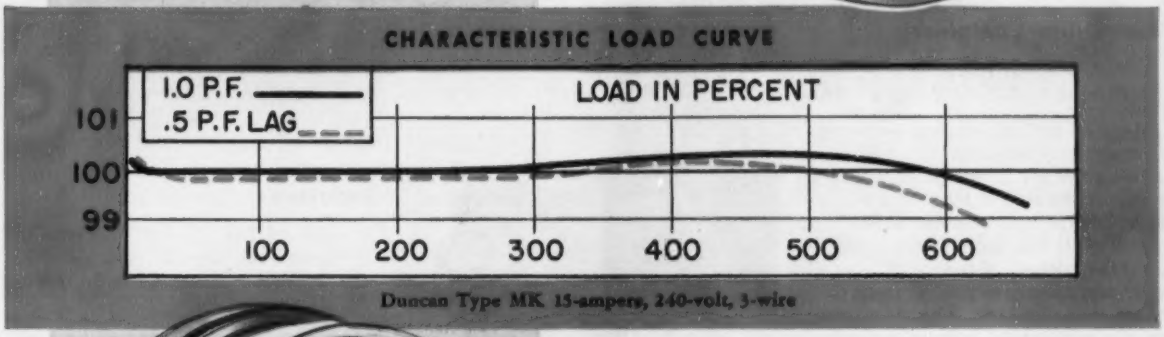

AVERAGE METER COST PER KVA
Based on usage of 5 and 15-ampere meters.

**DUNCAN ELECTRIC MFG. CO.**
**Lafayette Indiana**

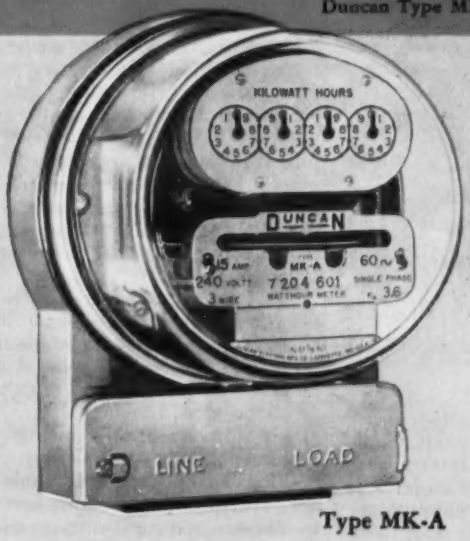
(Advertisement)

# NEW DUNCAN SINGLEPHASE METER OFFERS . . .

Type MK-S




Duncan Type MK 15-ampere, 240-volt, 3-wire




Type MK-A

## MORE CAPACITY PER DOLLAR

● Duncan Electric Mfg. Co., pioneer* in "extended range" metering, now offers the Type MK singlephase meter—a completely new design with increased capacity to keep ahead of the expanding use of electric energy. The general purpose Type MK meter, nominally rated at 15 amperes, has "extended range" capacity to meter continuous loads to 100 amperes—light load performance remains the same—no increase in price.

**Growth in the Electrical Industry** is well known —residential consumption doubling every 8 to 10 years. Numerous field tests have shown the present 15-ampere 3-wire general purpose meter (top capacity of 60-amperes) is now on the average less than half loaded. However, with the present *average* load running in the middle of the capacity range, more and more residential loads are pushing through the 60-ampere ceiling. Today's requirement for a sound investment, therefore, seems to be for *one meter* suitable for existing loads (minimum, average, and up to 100-amperes) and for loads of the future.

***Extended Range Developments Pioneered by Duncan***

**1930**—Type MD—15-ampere singlephase range extended to 60-amperes.

**1949**—Type MF—50-ampere singlephase socket meters with "extended range" capacity to 200-amperes.

**1949**—HD Device—mounting device with 200-ampere capacity for use on singlephase or polyphase.

**1951**—Type MH—50-ampere polyphase socket meters with "extended range" capacity to 200-amperes.

**1954**—Type MK—15-ampere singlephase with "extended range" capacity to 100-amperes.

## New Shipping Crate

*(11) Allis-Chalmers Mfg. Co., Milwaukee 1, Wis.*

Designed for easy handling with fork lift trucks, a new style shipping crate for distribution transformers has been announced by this manufacturer. Features include side bracing to distribute loads and reusable built-in pallet-type base. Side bracing eliminates need for runners when stacking units, it is pointed out, and two units can be lifted easily with a single fork truck because both incline toward the center to keep load stable.

## Fiber Drum Container

*(12) Wagner Electric Corp., 6400 Plymouth Ave., St. Louis 14, Mo.*

Savings of 25% in storage space and less damage to transformers in transit are claimed for a new type shipping container developed by this manufacturer. Distribution transformers in ratings of 3-10 kva are packed in eight-ply fiber drums fitted with special cover and closure to protect from dirt, grease, weather, etc. The transformers are secured by bolting mounting brackets to side of drum and fiber sleeves are used for additional bracing where necessary. The new container weighs 35% less than crates formerly used.

## Conduit Union

*(13) Appleton Electric Co., 1701 W. Wellington, Chicago 13, Ill.*

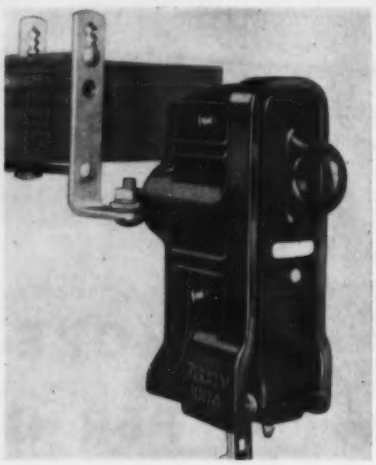
A new self-adjusting expansion-type explosionproof union is claimed to be safer and easier to install. It is a self-contained unit consisting of two parts instead of three. It is permanently assembled at the factory and requires only two tightening operations; is explosionproof under all conditions of expansion, the manufacturer states.

Reduced external diameters aid installation and a built-in phosphor-bronze spring insures positive grounding at all times, it is pointed out. Only one of these new unions is required on installations normally using two conventional unions, it is stated.

## New Package

*(14) Pieper-Lillard Inc., St. Louis, Mo.*

P-L anchors are now packaged in six-cartons, weighing about 50 lb, measuring 20x16x7½ in. The new packaging is said to be easier to store and to handle and to lend itself to modern materials handling techniques.



## Enclosed Cutout

*(15) Line Material Co., Milwaukee 1, Wis.*

A new porcelain intermediate duty 100-amp indicating box cutout, a 7.8-kv unit with a 4,000-amp interrupting capacity, supplements the initial 5.2-kv PID cutout. These cutouts are smaller and more compact than those previously considered standard for these ratings and offer higher interrupting capacities at lower cost, according to the manufacturer.

The double-hinged flipper on these units is said to assure positive link extraction during low-fault currents and to provide visible indication that the cutout has operated. Switch blade doors are available to convert the cutouts to 200-amp disconnect switches.

**(16) INSULATION TESTER** — Model 573A Hypot gives a-c output voltage continuously variable from 0-30,000 v at 1 kva capacity. Input is 115 v, 50-60 cycles. Applications include testing of motors, transformers, insulators, etc., according to the manufacturer, Associated Research Inc., 3758 W. Belmont Ave., Chicago 18, Ill.

## Enclosure

*(17) I-T-E Circuit Breaker Co., Small Air Circuit Breaker Division, 19th & Hamilton St., Philadelphia 30, Pa.*

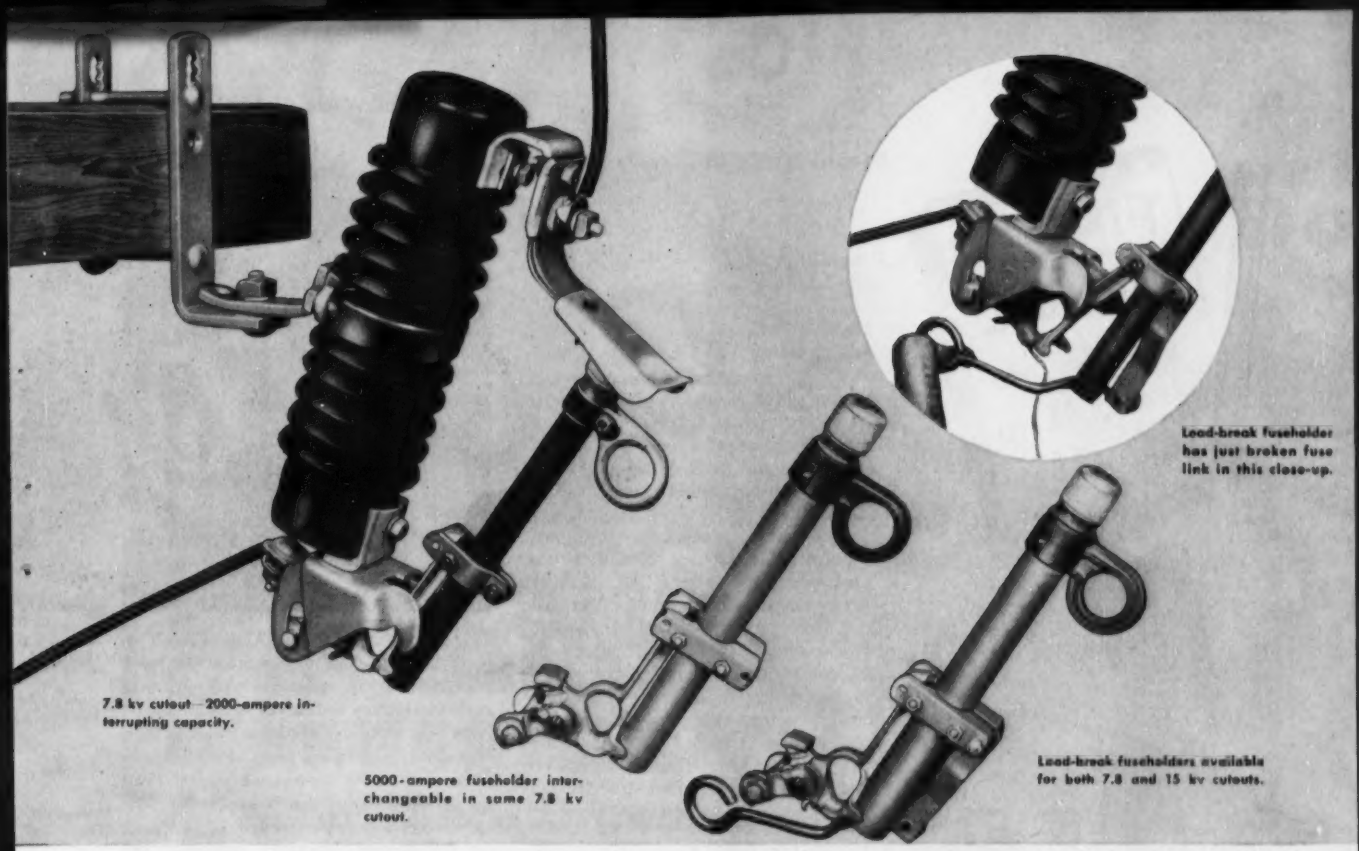
Patterned after Joint Industrial Conference requirements, this new NEMA 12 enclosure is said to assure dependable circuit breaker operation in atmospheres containing excessive particles of lint, dirt, sawdust and other foreign matter. Mounting holes and knockouts are omitted to prevent foreign matter as well as oil or coolant from entering the enclosure. External mounting feet simplify installation.

Newly designed operating mechanism operates breaker from outside enclosure. Visual name plate indicates position of breaker handle at all times. Handle may be padlocked in either on or off position. Defeater arrangement allows authorized personnel to open enclosure cover with breaker in on position. Design includes double-locking provisions of handle operating mechanism and enclosure cover.

Enclosures are available with the manufacturer's E, F, J and L frame circuit breakers in ratings from 15-600 amp; 125-600 v a-c; 125-250 v d-c.

**(18) MOTORS** — Century Electric Co., St. Louis, Mo., has announced motors in the rerated design. These Form F fractional horsepower motors are available as type SP split-phase single-phase induction motors for general-purpose applications where load is easy to start; type CS capacitor-start single-phase induction motors for hard-to-start applications; type SC squirrel-cage polyphase induction motors for all general-purpose applications.

**(19) FITTINGS**—For heavy construction, 4- and 5-in. connectors for flexible conduit are available from the Adalet Mfg. Co., 14300 Lorain Ave., Cleveland 11, Ohio.



7.8 kv cutout—2000-ampere interrupting capacity.

5000-ampere fuseholder interchangeable in same 7.8 kv cutout.

Load-break fuseholder has just broken fuse link in this close-up.

Load-break fuseholders available for both 7.8 and 15 kv cutouts.

# NEW G-E OPEN DROPOUT CUTOUT

## For FAULT PROTECTION—standard or heavy duty and LOAD BREAK—up to full load at any power-factor.

New simplified design of General Electric 7.8 kv and 15 kv, 100-ampere cutouts have these extra features:

**Birdproof Construction** accomplished by unique method of clamping the mounting support to the opposite side of insulator from live parts.

**Liberal electrical and mechanical strength.** New hollow tube wet process porcelain has under-cut petticoats for generous creep and strike distance; and porcelain insert fired within tube provides inside solid barrier between top and bottom live parts. Screen prevents insect nest within porcelain. Clamping U-bolt around porcelain is insulated with molded polyvinyl chloride having excellent insulating and weathering characteristics.

**Compression bolting to porcelain**—top and bottom fittings are bolted to insulator with porcelain under compression—for maximum mechanical strength. Compression clamps inside the porcelain maintain tight assembly.

**Shielded top contact and latch**—by roof-shaped contour and having ball-point contact surface to top of fuseholder, the top contact and its latch are protected from dirt deposits and sleet.

Other distinctive features are retained: Hinge guides allow slamming fuseholder from any angle; threaded cap seal at upper end of fuseholder forces expulsion gases downward; silver-plated contacts shielded from corrosive agents; vertical or angle-tilted swivel mounting with EEI-NEMA bracket; latch provides time-delay opening—assures fault current interruption before dropout action occurs; fuseholder tube of fiber and fabric-base Textolite* is water resistant, will not warp or split; close coupling of fuseholder to porcelain prevents multiplication of recoil forces.

For more information on these new open cutouts, contact your nearest G-E Sales Representative, or write to General Electric Company, Section 433-4, Schenectady 5, New York.

*Reg. trade-mark of General Electric Company

*Progress is our most important product*

GENERAL ELECTRIC

With factories in Anaheim, Los Angeles, Oakland, Ontario, San Francisco, San Jose, Seattle, and Richland, and Sales Offices in twenty Western cities.

PROPER COMMUTATION

COMMUTATION is the most important function of a motor brush. Conditions encountered below earth level, at earth level, or in the stratosphere will effect proper commutation. Location, humidity, temperature, dust and fume conditions, over-load and underload are as important as the machine itself. Identical motors and generators often do not give identical performance. Address your COMMUTATION problems to our Engineering Staff.

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## Recording Controllers

*(20) General Electric Co., Schenectady, 5, N. Y.*

A new line of process instruments is designed for continuous measurement and control uninterrupted by periodic standardization; incorporate new measurement circuitry and components. The line includes potentiometric and a-c bridge recorders and recording controllers.

Among new features are a magnetic standard in the potentiometric system and a bridge-balancing unit in the a-c bridge system. Both models are available with either electric or pneumatic control and are equipped with a centerless pointer claimed to simplify chart changing and to leave practically all of the chart exposed to view.

According to the manufacturer, the new design will reduce maintenance and component replacement costs considerably. The new magnetic standard eliminates dry cells, slidewires and many moving parts found in conventional potentiometric instruments, it is pointed out.

Chart speeds are 1, 4, 8, 12 and 24 hours and 7 days. Net weight varies from 75 to 95 lb according to control form and measuring system. The units use a 120-v 60-cycle power supply. The potentiometer has a power consumption of 65 w, the a-c bridge, 40 w.

## Radiant Heating Panel

*(21) Corning Glass Works, Corning, N. Y.*

A radiant heating panel designed for industrial application is said to be suitable for operation at temperatures as high as 350 C. Watt densities range from 2.6 to more than 9 w per square inch.

The heating element is unidirectional and is backed with an aluminized steel reflector. Because heat is radiated from a flat area source, remarkable uniformity of distribution is attained, the manufacturer claims. The large radiating area makes possible a high power output while element temperatures remain at a relatively low level, it is stated.

The panels are made in two standard sizes, each 1¾ in. thick in over-all dimension. The 13½-in.-square panel is available in 500, 1,000 and 1,500 w and the 17½x25½-in. panel in 1,000, 1,500, 2,000, 2,500 and 3,500 w. Details in booklet B-89.

**Fore more data fill in coupon on page 62**

**(22) AUTOMATIC GARDENER—This new sprinkler control operates on 115-v 60-cycle current; is for use with any concealed irrigation system. In units to control from one to twelve sections or areas, it is connected to existing pipes or valves and plugged into the nearest a-c outlet. Tripper on the 24-hour dial is set for the time sprinkling is to begin each day. The minute dial controls length of operation. The Zubastat, an outside control electrically connected to the sprinkler control panel, automatically throws the switch off when it rains. Product of Tork Clock Co. Inc., Mount Vernon, N. Y.**

## Mobile Capacitor Equipment

*(23) Line Material Co., Milwaukee 1, Wis.*

Mobile capacitor equipment, recently built to customer specifications, is a new item in this manufacturer's line. It includes a 2,700-kv three-step bank with independent voltage control and three Kyle NR switches for automatic switching of each step. Flameless power fuses protect each step.

The bank consists of 7,200-v 25-kv capacitors connected for grounded-wye operation at 12,470 v. A transformer provides a 120-v source for control circuits and for small auxiliary requirements.

The bank is mounted on a 29x8-ft flat-bed trailer and is enclosed by steel sides and doors. The enclosure has a screened top and a louvered floor for ventilation. An integral part of the unit is a hinged steel mast with a steel crossarm. Locked in position when the bank is being placed in service, the mast facilitates connection of the power leads through the porcelain-sleeved entrance bushings.

The unit has a hand brake for parking in addition to air brakes. It also has running and parking lights. A tractor is not furnished with the unit.

The Kearney Trip Out Open Type Cutouts, Cat. No. 18821 used in the test.

*By Actual Test*

# KEARNEY FUSE LINKS

## Prevent Fibre Damage

This simple test proves that Kearney Low Temperature Fuse Links give better system protection. Put a Kearney 100 ampere Type 200 Fuse Link in one cutout and any high temperature fuse link which has about the same continuous current carrying capacity in another. Pass 175 amperes through them for 1 hour and 50 minutes and then melt them with an increased load of 250 amperes. Now, let's look at the results.

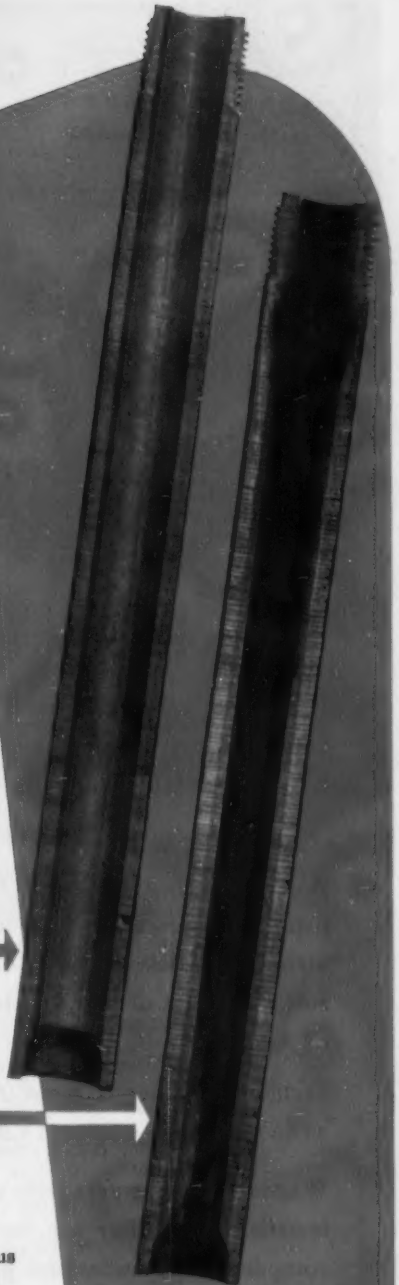
### LOW TEMPERATURE →

This unretouched photograph shows the interior of the cartridge fused with the Kearney Fuse Link. Note the absence of any charring or burning. Original arc extinguishing properties remain unchanged; cartridge could stay in service indefinitely.

### HIGH TEMPERATURE →

This is the tube used with the high temperature fuse link. Look how most of its surface has been deeply burned, seriously reducing its arc extinguishing ability. This cartridge obviously should be replaced immediately.

**WARNING:** How many of your cutout cartridges are in this dangerous condition? If you have been using high temperature fuse links and have normal service overloads such as described above, then chances are that most of them look like the tube on the right. Remember, you can't see the damage from the outside, but the charred fibre on the inside will fail to quench the arc on the next operation. Play it safe. For reliable, low temperature system protection, switch to KEARNEY FUSE LINKS.



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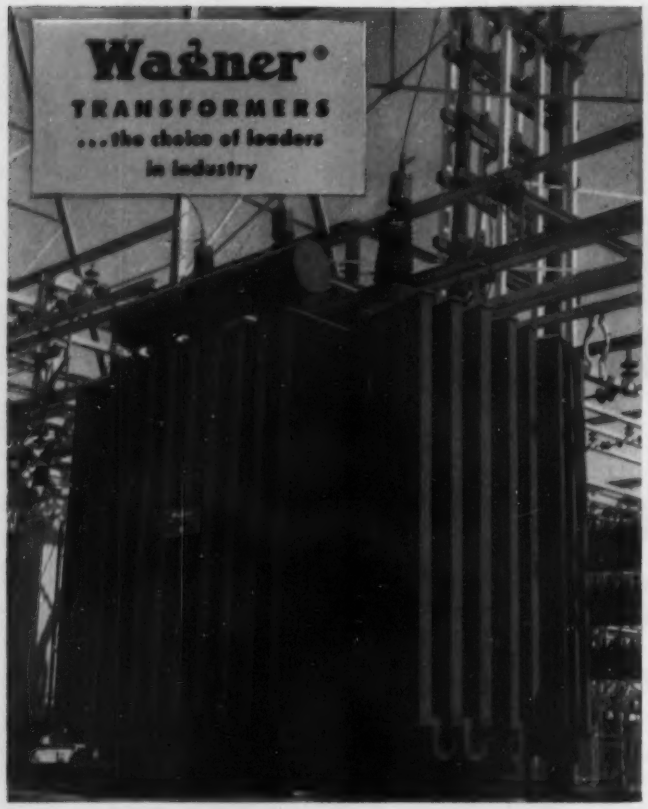
*Specify*

# Kearney Products

JAMES R. KEARNEY CORPORATION ST. LOUIS, MO.

For Better Construction . . . *Safer* Maintenance




# Wagner Transformers installed at Aluminum Company of America Rockdale, Texas smelting plant

A bank of four Wagner Power Transformers has recently been installed in the main substation at the Rockdale, Texas smelting plant of the Aluminum Company of America.

Each transformer is rated 25000/33333/41667 kva, 138,000 to 13,800 volts.

Wagner Transformers were chosen for this installation, as they are for many power companies and industrial plants, because of their ability to give reliable and economical service over unusually long periods of time.

Wagner Power Transformers have been serving the power industry since 1891. Service records from the field, dating back more than sixty years, prove that thousands upon thousands of Wagner Transformers are giving thoroughly dependable service.

Why not look to Wagner for your next power transformer installation? There is a Wagner field engineer near you who will be glad to offer his services as a consultant.

* * *

If you need power transformers rated 10,000 kva and below—three phase, or 5,000 kva and below—single phase, why not check ASA C57.12b Standards and use them as your specifications? In addition to saving the cost of preparing specifications, you will also realize a substantial saving in price by using Wagner Standard Transformers.

Wagner has all the manufacturing facilities and years of engineering "know-how" necessary to build power transformers in the ratings required for modern power systems. Branch offices are maintained in 32 principal cities, for quick, convenient engineering service and consultation.

Bulletins TU-180 and TU-181 give full information on Wagner Power and Distribution Transformers. Write for your copies today.

Wagner Electric Corporation EST. 1891

WAGNER ELECTRIC CORPORATION
6381 Plymouth Ave. • St. Louis 14, Mo., U. S. A.

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AUTOMOTIVE BRAKE SYSTEMS — AIR AND HYDRAULIC

BRANCHES IN 32 PRINCIPAL CITIES

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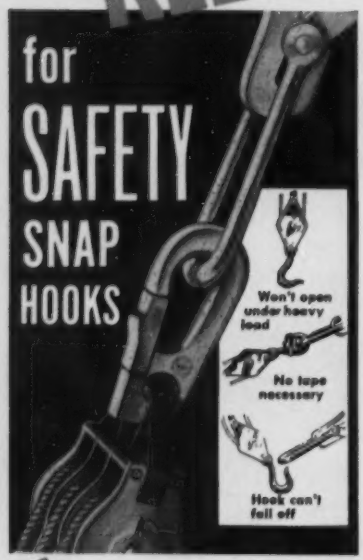
KLEIN

for SAFETY SNAP HOOKS



455 Solid Eye

Here's strength, safety on heavy loads—for blocks, tackles and hoists. Klein Safety Snap Hooks are time savers, too, eliminating the necessity of taping or wiring the throat. Made of drop forged steel—carry a working load of 8,000 pounds with adequate safety factor. Snap on easily with one hand—may be used on any conventional steel block 6 inches or smaller, or on chain hoists or snatch blocks. Four types regularly available. Specify 455-SH-3 Snap for use with 1½-ton hoists . . . No. 455-SP for double chain hoists and for attachment at housing. Klein can also supply safety snap hooks for lighter loads.

455-S Swivel Eye

455-SH Swivel Eye

Foreign Distributor: International Standard Electric Corp., New York

455-SP

Write for your free copy of the Klein Pocket Tool Guide today!

ASK YOUR SUPPLIER

Mathias KLEIN & Sons
Established 1857 Chicago, Ill., U.S.A.
3200 BELMONT AVE CHICAGO 18 ILL


## Switch

*(24) Federal Pacific Electric Co., 50 Paris St., Newark, N. J.*

A new reversing drum switch is made for all ratings up to two horsepower. This bulletin 905 is suitable for use with many types of electrically driven equipment, it is stated. It is small and compact and features double-break silver contacts for long wear. Contacts are closed by positive straight line action to increase interrupting capacity and eliminate sliding or teasing and resultant wear.

These units come in a compact type A (NEMA type I) sheet steel enclosure with a U-shaped cover. Mounting holes on the bottom and back of the enclosure are provided for mounting in various types of locations. Another feature is a reversible operating handle, which may be changed to operate from front, back or either side.

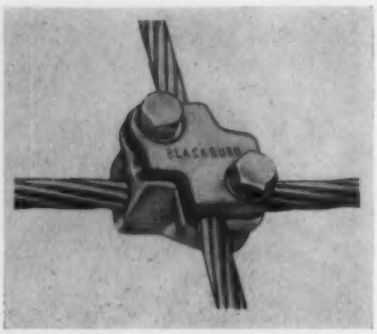
## Locator

*(25) All-Steel Equipment Inc., Aurora, Ill.*

The Raco Locator device ring is claimed to eliminate time wasted in finding and cleaning outlet boxes and to do away with bits of plaster lodging in the pipe. It positions over the outlet box before plastering. After plastering, the raised section of the Locator remains in sight. Even in instances where warped or imperfect studding requires extra thickness of plaster, a raised embossment in the center of the knockout is always visible, it is pointed out. A leverage hole in the embossment permits easy removal of the knockout.

The device is available in two sizes: ½ in. raised and ¾ in. raised.

**(26) CONTROL TRANSFORMERS**—A line of machine tool control transformers is being offered by Acme Electric Corp., Cuba, N. Y. According to the manufacturer, these transformers may be used wherever there are control problems on equipment designed for 230 or higher voltage operation.




## Clamp

*(27) Jasper Blackburn Corp., 35 Madison St., St. Louis 6, Mo.*

An improved cross tap clamp for joining different combinations of cable sizes is said to be stronger and more versatile. It is made of high strength copper alloy; has silicon bronze bolts and phosphor shakeproof lockwashers. Eight connectors accommodate cable sizes from No. 6 to 1,000 MCM. All edges are rounded for easy taping. Bulletin XT gives details.

## Derrick

*(28) J. H. Holan Corp., 4100 W. 150th St., Cleveland, Ohio.*

A new live-boom, heavy-duty derrick of 12,000 lb capacity—one of a new 3700 HL series—can erect 70-ft poles with ease, remove poles from the toughest ground and load heavy equipment on to the body space, its manufacturer states.

The series 3700 HL derrick is made in three sizes with maximum capacity of 12,000, 11,000 and 10,000 lb and integral stiff leg capacity of 16,000, 15,000 and 14,000 lb respectively. Body loading and unloading capacity is 5,000 lb for each size.

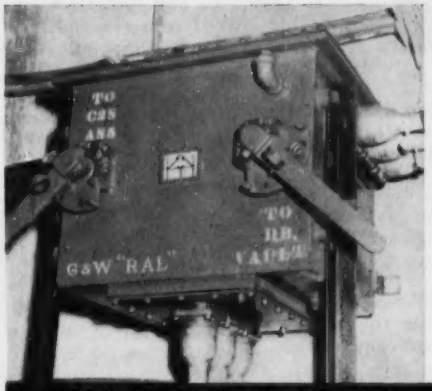
Power for operating is provided by a hydraulic pump driven by a power take-off mounted on the truck transmission. Control knob on dash engages power take-off to drive pump. Automatic throttle control is provided. Complete derrick operation is controlled by one man standing at left rear side of body where the control levers are located. Safety features are incorporated.

**(29) SWITCH BOXES**—A line of sectional switch boxes with beveled corners is offered by Keystone Mfg. Co. They come in a variety of styles. A bulletin may be secured from the manufacturer at 23328 Sherwood Ave., Center Line, Mich.

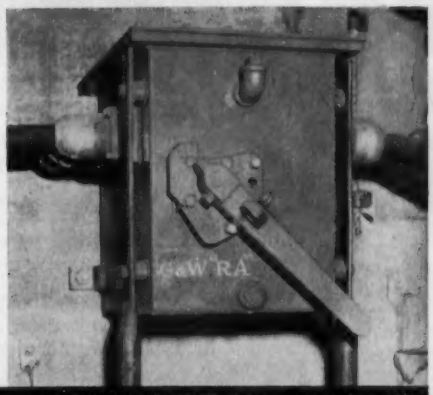
**(30) SWITCH**—A heavy-duty double-pole double-throw switch for reversing high currents at low voltage has been announced by Columbia Electric Mfg. Co., 4519 Hamilton Ave., Cleveland 14, Ohio. It is rated 3,000 amp.

# G&W *load break* secondary OIL SWITCHES

- **Eliminate Secondary Outages While Changing Transformers**
- **Quickly Restore Secondary Services When Primary Circuit Is Out**

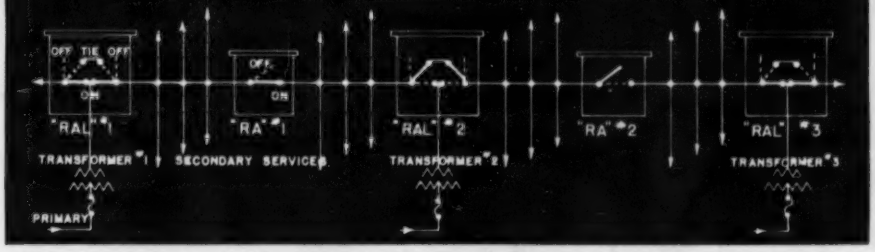



Type "RAL" oil switch, 3-way with 2 sets of links—each 3 position ON-TIE-OFF, 3 pole, 600 volts, 1000 amperes.*




Type "RA" oil switch, 2-way 2 position ON-OFF, 3 pole, 600 volts, 1000 amperes.*

## Regularly Used by Electric Utilities for over 25 Years!




Referring to the circuit diagram, the "RA" 2-way oil switches are normally open and the separate groups of secondary services are fed through the "RAL" 3-way oil switches. Assuming that transformer #2 requires "changing out" to a larger size, the secondary loads normally fed from transformer #2 can be transferred to transformer #1 by operating the "RAL" #2 and closing the "RA" #1 load break oil switches.

*Illustrations show wiping sleeves for lead covered cables, but alternate stuffing boxes or porcelain stud bushings for non-leaded cables are available.

***Send for Bulletin DB51—Special Section, listing 600 volt "RAL" and "RA" oil switches in 400 ampere and 1000 ampere ratings.***

**G&W ELECTRIC SPECIALTY CO.**
**7780 Dante Avenue, Chicago 19, Illinois**
Representatives in principal cities of U.S.A.
In Canada—Powerlite Devices, Ltd., Toronto, Montreal & Vancouver.

G&W

D542

# PROOF*

* **FLAME-PROOF** — Bronco 60 Certified bears the flame-proof approval number P116BM of the United States and Pennsylvania Bureaus of Mines.

* **PROOF OF CONTENTS**—Jacket is *certified* by a registered professional engineer to contain not less than 60% Neoprene by weight.

* **PROOF IS BRANDED**—"...60% Neoprene *by weight...*" is vulcanized into the jacket along with type, size, number of conductors, voltage, and "P116BM" every two feet.

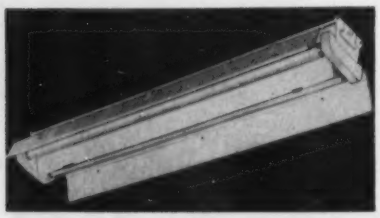
* **OIL-PROOF**—The rich Neoprene jacket of Bronco 60 Certified will not swell and crack when doused in oil.

* **OZONE-PROOF** — Around electric motors and generators Bronco 60 Certified resists attack of ozone.

* **SUN-PROOF**—Rays of the sun can't break it down. In fact, Bronco 60 Certified is proof against all of rubber's natural enemies.

Sold nationally only through leading Electrical Wholesale Distributors

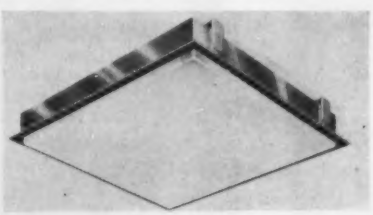
WESTERN INSULATED WIRE CO. LOS ANGELES 58, CALIF.

## Slimline Fixture

*(31) Smoot-Holman Co., Inglewood, Calif.*

Two new slimline fixtures feature upward component factors of 20-30%. They are the UC-244, a 4-ft model, and the UC-284, 8-ft unit. Both accommodate twin fluorescent lamps in metal-clad depressible-type lampholders. They come wired for 110/125 v, 60 cycles, a-c. Reflectors are open end for continuous mounting and are finished in white porcelain enamel with a reflection factor of 85% or more. Shielding is 27°. The 244 and 284 units comply with RLM specifications No. 35 and 37 respectively.



## Large Area Luminaire

*(32) Sunbeam Lighting Co., 777 E. 14th Place, Los Angeles, Calif.*

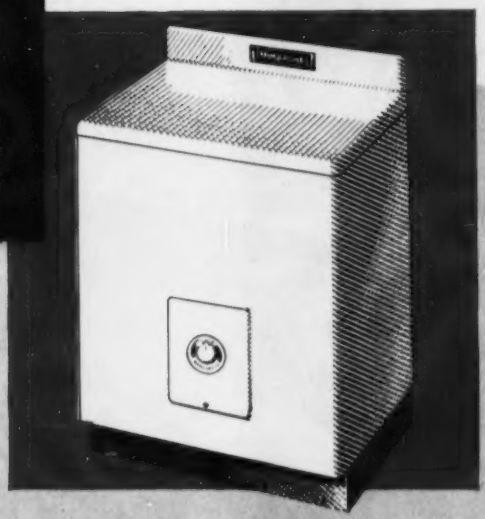
This new HSDP3800 series consists of 4-ft square (nominal) recessed light cells designed for large commercial interiors. The units have translucent white Plexiglas diffusing panels for glareless, balanced illumination in high-ceiling areas. They are constructed of heavy-gage steel and incorporate features for easy installation, it is stated.

The plastic diffusing panel is molded from a single sheet of Plexiglas and is supported in a full-length piano-hinged frame. The recessed units are finished in high reflectance white enamel. The series is made for four, six or eight fluorescent or slimline lamps; is also designed to take other diffusing elements for specific lighting purposes or to fit particular architectural needs. A single, molded Plexiglas panel with geometric pattern is available as are metal eggcrate louvers providing 32° shielding.

**Fill in Coupon on Page 62**

# Hotpoint

**has PROVED that water heating is done best by ELECTRICITY**



Hotpoint Electric Water Heaters have proved by their efficiency that heating water by electricity is not only practical . . . it's the *best* way to do it. The American public has purchased 6,000,000 electric water heaters. This means that there are 6,000,000 more electric power buyers developing utility revenue. And further—these are steady, round-the-clock customers who help balance your load during off-peak hours.

Hotpoint offers a complete line of water heaters to meet every need. There's a full range of sizes in both round and table-top models. Every unit features the famous MAGIC CIRCLE® heat with Calrod® heating units. Water is heated by conduction, the most direct and simple way.

Because Hotpoint pioneered this business, and, because Hotpoint Water Heaters are the recognized leaders, nearly 2,000,000 of the water heaters in use today were made by Hotpoint. Learn all the facts about Hotpoint Automatic Electric Water Heaters from your local Hotpoint distributor. Keep building acceptance for electric water heaters, and build assured revenue for the future with Hotpoint . . . the world's finest.

*Again* Hotpoint *looks at Tomorrow, Today*

HOTPOINT Co. (A Division of General Electric Company) 5600 West Taylor Street, Chicago 44, Illinois

*During this Diamond Jubilee of Light...*

1879 1954

*Sylvania seeks still greater LIGHTING PROGRESS*

Since 1901, Sylvania has pioneered in the development and improvement of incandescent lighting. Year by year, improvements in materials, methods, and testing techniques have brought about the Sylvania bulbs, well known today as "The Best Light in Sight."

In 1939, Sylvania introduced its first fluorescent lamp. And again, continuous laboratory research and improved methods have paid off in far superior products . . . lamps which give more lumens of light per dollar throughout their life.

Today, at the 75th anniversary of electric light, Sylvania lighting engineers are working toward still greater achievements . . . endeavoring to bring more efficient, more economical light to homes, schools, commercial and industrial organizations throughout the world.

**SYLVANIA**

On the West Coast—215 Market Street, San Francisco 5, Calif.

Sylvania Electric Products Inc., 1740 Broadway, New York 19, N. Y.

LIGHTING • RADIO • ELECTRONICS • TELEVISION

## Communication Equipment

*(33) General Electric Co., Electronics Division, Syracuse, N. Y.*

Addition of a new 15-w mobile unit and a new 15-w base station unit to the manufacturer's line of low-band (25-50 mc) two-way radio communication equipment has been announced.

The two-way radio unit may be operated, without additional equipment, from either a 6- or 12-v power source. The power supply chassis of the new mobile unit is a dual interrupter type vibrator that makes possible the use of either a 6- or a 12-v operation interchangeably, it is pointed out. In addition the car battery may have either positive or negative ground without the problem of determining polarity when installing the mobile unit.

Transmitter, receiver and power supply chassis are mounted in a small, louverless, enclosed housing. To avoid outside interference, the transmitter employs double-tuned circuits that attenuate spurious radiation in excess of minimum FCC requirements.

Although normally truck mounted, the unit is available also for front-mount operation. Both mobile and base station combinations are available for either narrow-band (20-kc channel) or wide-band (40-kc channel) operation.

**(34) FUSE CUTOUTS**—A new line of open dropout fuse cutouts, type DX, is for use on 5.2-, 7.8- and 15-kv distribution systems. The new cutout is said to be more rugged than its predecessor and to have more contact area. It employs sleet shields on both top and bottom contacts. A polyethylene coating on the metal clamps that hold the metal parts to the porcelain insulator prevents short circuits from birds. The unit will take a standard or heavy-duty fuse holder or a disconnect blade. The standard cutout fuse will interrupt 3,000 amp at 5.2 and 7.8 kv and 2,000 amp at 15 kv. The heavy-duty model will handle 5,000 and 4,000 amp respectively. Made by Westinghouse Electric Corp., Box 2099, Pittsburgh 30, Pa.

# Operation "Brain Center"

This room is the control, nerve, or "brain center" of the modern public utility system. From this room control cables carry impulses that operate switches, remote control devices, and telemetering equipment. Here men, by means of remotely-controlled switches, set up and break down circuits. It is here that failures of equipment and outages caused by the elements are circumvented.

All of these operations depend upon the sure and dependable performance of Simplex Control Cables. They must be ready to operate under every conceivable kind of condition. These control cables bear a measure of responsibility entirely out of proportion to their size. But they do it with absolute dependability. The safety of many millions of dollars of public utility equipment rests upon these slender cables and the equipment they control.

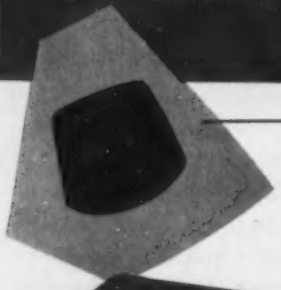
Simplex Control Cables are made in three styles: Anhydrex-insulated and neoprene-jacketed, Polyethylene-insulated and Plastex-jacketed, and Plastex-insulated and Plastex-jacketed. There is a size and a style to meet every operating condition on your public utility system, whether it be to operate equipment at a distance, for telephone and communication circuits, for telemetering devices. Whatever the need, be sure that the vital connecting link between the "brain" and the equipment is Simplex Control Cable.

Your local Simplex representative will be glad to help you with any problem you may be facing which has to do with cables.

**Simplex Control Cables**

*products of*

**SIMPLEX WIRE & CABLE CO., 79 Sidney Street, Cambridge 39, Mass.**



**PLUS** THIS HANDY WRENCH, exclusive with **UNION,** supplied with all sockets, one wrench per carton at no extra cost. Molded of eye catching red plastic.

**AND** in MEDIUM BASE SOCKETS cap threads are completely **"MOLDED-IN"** —providing smooth running, trouble-free threads that can't be stripped.

**ALL UNION SOCKETS** and **STREAMERS** available for prompt delivery from factory or warehouses.

UNION INSULATING COMPANY
PARKERSBURG, WEST VIRGINIA

## Meter Testing Equipment

*(35) Electrical Facilities Inc., 4235 Holden St., Oakland 8, Calif.*

Type TE-7 is designed for testing watt-hour meters, both single-phase and polyphase and all types within test voltages of 120, 240 and 480 v and current ranges of .25, .5, 1, 1.5, 2.5, 5, 10, 15, 25 and 50 amp. It features the Uniload system.

The equipment includes a new switching arrangement for connecting meter elements so that three-element polyphase meters, as well as the two-element type, can be tested without manually changing the connections, it is pointed out. Also included is a higher insulation test voltage, added capacity in the loading transformer and a constant selector by which the basic constant of the rotating standard can be adjusted to match the basic constant of the meter under test.

Universal and socket-type adaptors and a photoelectric counter come with the equipment. Over-all accuracy is within .05%, it is stated.

## Test Set

*(36) James G. Biddle Co., 1316 Arch St., Philadelphia 7, Pa.*

A new dielectric test set, a portable field instrument, measures d-c current at voltages up to 40 kv when applied to the insulation of such equipment as generators, transformers, bushings and cable.

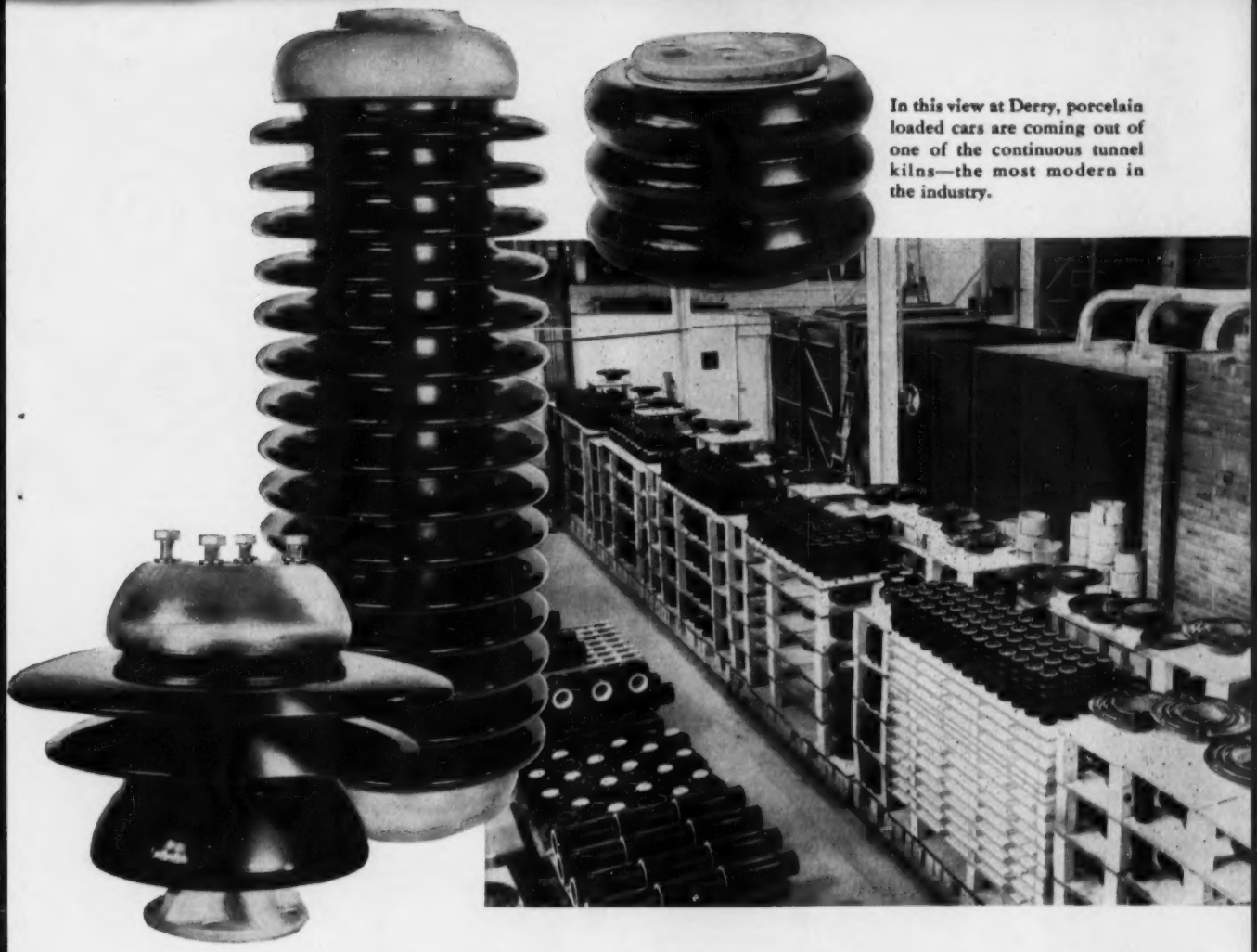
Safety features, excellent output voltage regulation, simple operation, compact design and facilities for making voltage and current measurements at either polarity have been incorporated, according to the manufacturer. The set has a current rating of 25 ma at short circuit and current measurements can be made down to 0.5 microamperes. Bulletin 22-11 gives details.

## Mobile Radio System

*(37) Allen B. Du Mont Laboratories Inc., Mobile Communications Department, Clifton, N. J.*

Two-way mobile equipment for operation in the 25-54-mc band was designed for field operating requirements of public utilities, police, trucking fleets, etc. This MCA-101A system is rated at 35 w output at 25-45 mc and 30 w at 45-54 mc.

Transmitter, receiver and power supply are housed in a single metal cabinet. The operating panel has been designed for dashboard mounting at the operating point. The complete transmitter-receiver-power supply unit weighs 35 lb; measures 8¼ in. wide, 16¼ in. long, 6 in. high.



In this view at Derry, porcelain loaded cars are coming out of one of the continuous tunnel kilns—the most modern in the industry.

# Insulator quality vital to apparatus performance

It's easy to overlook the importance of the apparatus insulators in the performance of Westinghouse switchgear. Insulators are such "taken-for-granted" components that we may forget what it takes to make good ones.

The answer is quality—quality that stems from vigorous research and development, up-to-date production facilities, skilled craftsmen and priceless know-how. Apparatus insulators made at the Westinghouse Porcelain Department at Derry, Pa., reflect the experience gained in a plant that produces the country's greatest variety of electrical porcelain.

These facilities and craftsmen (average 20 years' service) have sparked such outstanding advances as larger, one-piece, pin cap insulators; casting process for outdoor station post insulators; high-strength glazes; Prestite®; solder-sealing; pressed steel hardware and the first line of indoor apparatus insulators meeting the industry's basic impulse insulation level standardized requirements.

Westinghouse apparatus insulators include a complete line of outdoor pin cap and new BIL indoor types in all strengths and voltage ratings, as well as outdoor station post insulators in all standard strengths through 69 kv.

Proved insulator quality is one of many reasons why you can be sure of better performance—better value—with Westinghouse switchgear apparatus. Westinghouse Electric Corporation, 3 Gateway Center, P. O. Box 868, Pittsburgh 30, Pennsylvania.

J-60867

YOU CAN BE SURE...IF IT'S

Westinghouse

Plants at Berkeley, Calif.; Sunnyvale, Calif.; Emeryville, Calif.; Los Angeles; Portland; Salt Lake City; Seattle; Denver

ready-wired
continuous
outlet system
best for homes,
office buildings,
factories, stores,
institutions

PLUGMOLD
builds better
business for you
... at a profit!

GET A 20-FOOT PLUGMOLD PACKAGE today! One job will convince you that this is the most satisfactory and profitable way to install convenience outlets! Provides outlets every 30", 18", 6" or closer in clusters. Write for full information.

PLUGMOLD

*fastest, easiest, cheapest way to more electrical outlets*

*Rely on Wiremold's "Big 4" to solve your wiring problems! Plugmold Continuous-Outlet Systems — Wiremold Surface Raceways — Pancake Overfloor Raceways—Wiremold Fluorescent Units.*

The WIREMOLD Company
HARTFORD 10, CONN.
Wiremold products are backed by a firm guarantee. See page 7 of Wiremold Catalog No. 19

# BULLETINS ETC.

(38) BALLAST SOUND RATINGS—A bulletin describing fluorescent ballast sound ratings and their use in lighting applications is available from General Electric Co., Schenectady 5, N. Y. It is designated GEA-5672B.

(39) LOUVER DIFFUSER—A bulletin on its Gratelite louver diffuser is available from The Edwin F. Guth Co., 2615 Washington Ave., St. Louis, Mo.

(40) CEILINGS—Installations of Acusti-Luminus ceilings in stores, offices, drafting rooms, banks are pictured and described in recent booklets prepared by Luminous Ceilings Inc., 2500 W. North Ave., Chicago 47, Ill.

(41) MV EQUIPMENT—A 50-page catalog of its mercury vapor lighting equipment, poles and mast arms is offered by NEPO Mfg. Co., 6025 N. Keystone Ave., Chicago 30, Ill.

(42) POSTS—A new line of all aluminum posts and cast aluminum lanterns and accessories is described in a 10-page catalog prepared by Hadco Aluminum Products Co., 501 Pressley St., Pittsburgh 12, Pa.

(43) PRICE CATALOG—A 44-page price catalog has been released by Smithcraft Lighting Division, Chelsea, Mass. It combines pricing data, photographic illustrations and condensed catalog information.

(44) MOTORS—Design of two-pole motors 900 hp and larger is described in a new eight-page bulletin from Allis-Chalmers Mfg. Co., 939 S. 70th St., Milwaukee, Wis. The bulletin incorporates a reprint of the article, "Auxiliary Drive Motor Keeps Pace with Modern Power," by C. D. Lawton of A-C's motor and generator section.

(45) ANTI-OXIDENT—Sprayox, a new anti-oxident packaged under pressure in a spray can is described in bulletin 95-201 from Preformed Line Products Co., 5349 St. Clair Ave., Cleveland 3, Ohio. The spray can may be carried on the lineman's belt. Two belt-holders come with each case of Sprayox.

(46) CATALOG SHEETS—Insertions for its general catalog recently issued by Anaconda Wire & Cable Co., 25 Broadway, New York 4, N. Y., include information on solderseated potheads, an addition to its line. These new units are available for prompt delivery, it is stated.

(47) OUTDOOR LIGHTING—Catalog sheets describing its new line of outdoor and garden lighting fixtures are offered by Teal Corp., 14 Cordier St., Irvington, N. J. This manufacturer also has a garden lighting brochure.

(48) GASKET—A bulletin telling how flange surface finishes affect gasket sealability and joint performance is the latest in an illustrated technical series issued by Johns-Manville, 22 E. 40th St., New York 16, N. Y.

(49) POWER PLANT EQUIPMENT — Custom-designed equipment for hydroelectric and steam power plants and water works is described and illustrated in a new bulletin prepared by Pacific Coast Engineering Co., Alameda, Calif. Shown are cranes, gates, hoists, penstocks, pipe, valves and other units. Installation and catalog pictures are included.

**KILL TWO BIRDS WITH ONE STONE—Fill out this coupon and get back valuable information from as many sources as you indicate.**

**ELECTRICAL WEST**
**68 Post St., San Francisco 4, Calif.**

***Not good after December 1***

Please send me, without obligation, the new product information or catalogs:

**If described in Product News, circle item number**

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40
41 42 43 44 45 46 47 48 49

**If described in advertising, fill in page number**

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COMPANY.....

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CITY..... ZONE..... STATE.....

* Please include your company's name and your position, as we cannot ask manufacturers to furnish literature unless you do.

No. 5
IN A SERIES

## AN ENGINEER ASKS—

***"why, even in severe sleet storms which caused conductor and tower failures, have we never had a mechanical failure with a PINCO 1060?"***

## HERE'S THE REASON

The answer to this question can be summed up in one statement . . . it is because Pinco Suspension Units are *designed and built to meet service needs* and not just to meet specification requirements. In other words, the correct basic design and rugged construction of Pinco Suspension Units provide extra mechanical and electrical strength for that added margin of safety even under the worst operating conditions.

**PINCO SUSPENSION INSULATORS are *better* insulators because—**

**they are 10% HEAVIER!...**
**at least 20% STRONGER!...**
**and 25% BETTER ON IMPACT TESTS!...** **proof that they are always "RIGHT *for* the Job" and "RIGHT *on* the Job." Remember this when you specify and buy suspension insulators.**

• For complete information regarding the Pinco 1060 and other Suspension Insulators, refer to Pinco Catalog No. 49, Pages 62 to 73.

PINCO INSULATORS

The Porcelain Insulator Corporation
LIMA, NEW YORK

RIGHT ON THE JOB—

# ELECTRA'S HUSBAND

## SALESMEN IN SPITE OF THEMSELVES

"HEY, listen to this," I said to Electra one evening recently when I was cleaning out a couple of drawers in the desk—at her insistence. " 'In computing sales costs on the Pacific Coast, living expenses are estimated to be $7.50 in larger cities and $6 per day in the smaller towns. The salesman's monthly salary is set at $275, which is believed to be currently representative. Auto allowance is 5c per mile, the usual rate.' Did those days ever exist?"

"I don't know what you're talking about," Electra observed dryly. "Have you found a copy of an old expense account?"

"No, it's a 1940 estimate of the cost of a selling trip," I explained. "Forty days on the road, 1,800 miles of travel, 210 sales calls—all for a total sales expense of $678.97. Living expenses, $222.75, and auto mileage, $89.55. And not a dime for entertainment. Wouldn't a sales manager like to have his salesmen work on that basis today!"

"You mean where would you find a wife today that would stand to have her old man out on the road for forty days," she sputtered. "Or for that matter where would you find a salesman who would stay away from home that long. And as for $275 a month, that's ridiculous."

"But then salesmen had to work like that back in the late thirties," I commented. "It was different then. There was plenty of competition and there were plenty of potential salesmen. Selling was a way of life—the man who could sell was proud of it. But the war and the easy days spoiled all of that. Even the older salesmen forgot how to sell during the big seller's market. Now that we are getting into a competitive market once again, there simply aren't enough real salesmen. Two-thirds of the people selling today don't know what competition is."

"Do you know something?" Electra asked acidly. "You talk like some of the sales managers I meet at your conventions. There are a lot of good salesmen around. I know because I meet them too. They're keenly interested in their work."

"What you are saying reminds me of the story Charlie Huyck told at the Electric Club the other day," I interrupted. "It was about the fellow who owned a hunting dog named Salesman."

"What about it?" she inquired sarcastically.

"Well this dog got so good that it won a couple of field trials and the owner changed his name to Sales Manager," I continued. "That was a fatal mistake, because from then on all the dog did was growl at whatever was put in front of him to eat and sit on his tail and bark at all of the other dogs."

"The story reminds me of something Mrs. Bowman told me at lunch yesterday when I was downtown," she chuckled. "She said that Bert has been getting a terrible riding from the sales manager of his company. His boss has been cutting out all of the magazine articles about selling being a lost art and salesmen not selling. He has them photostated and sends them to his whole sales force. It's got Bert really mad.

"Mrs. Bowman says that Bert doesn't need anyone to tell him when his sales record is bad. She knows when he's had a bad day or a bad week as soon as he walks into the house."

"Fact is that every real salesman knows when he has had a bum month," I mused. "Chances are he feels a lot worse about it than his sales manager too. Furthermore he doesn't need any prodding to do something about it either if he's a real salesman. But as I said before, I think that kind is a vanishing breed."

"Don't sell a lot of these youngsters short," Electra insisted. "They haven't been tested yet. Let them sell in the face of competition before you judge them."

NOT many days after that conversation I was attending a convention where one of the principal speakers was the retired vice-president in charge of sales of a noted American industrial organization. He put the sales situation in a different light. Here's the gist of his remarks:

"Whether they know it or not, half the graduates of our colleges and universities are going to be forced into selling of some kind—yet selling isn't even on the list of subjects taught in our schools. We hear a lot of talk about shortages of engineers, of technicians and of researchers, but the real shortage is in salesmen. We need 600,000 new salesmen to move the products of our factories—that's the real shortage.

"It rests with those who are responsible for selling to see to it that the tremendous new productive capacity of our industrial organizations reaches the customer. As little as a 10% slowdown in sales can trigger a depression in this country. To a salesman the most disastrous words that can be spoken are 'we are going to wait and see before we buy.' Phrases like these can start a chain reaction that could lead right into a recession.

"Salesmen are the peacetime soldiers of America who can save our way of life. Old heads must take on the job of training new salesmen. Something like 85% of today's retail salesmen were not on the job back in 1939 and have never had to sell anything. Never having known anything but a war or a defense economy with a seller's market, they don't even know what it is to sell.

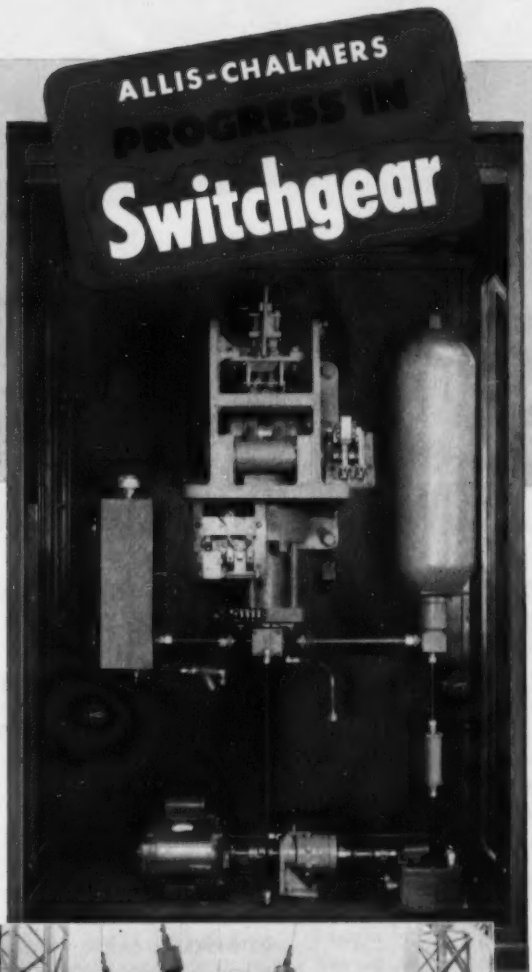
"More than ten years of easy going has spoiled many salesmen. We are going into a period of strong competition the likes of which we have not seen for a decade, and for a fewer number of consumer dollars than in the lush recent past. And it will be a period in which price alone isn't the answer. Salesmen will need an expert knowledge of their product plus a great and lasting pride in their profession if they are to succeed."

There were a number of salesmen in the audience. Their applause was long and loud.

For myself, I remembered the admonition of Dexter M. Keezer who has said that the difference between prosperity and a depression could very well depend upon the art of selling. The consumer, he insisted, can take or leave a large share of this nation's production with very little inconvenience.

# "Pneu-Draulic" Operating Mechanism for Breakers

# Looks Simple....IS SIMPLE!




**Only 1 adjustment in hydraulic system...**
to position the spool valve.

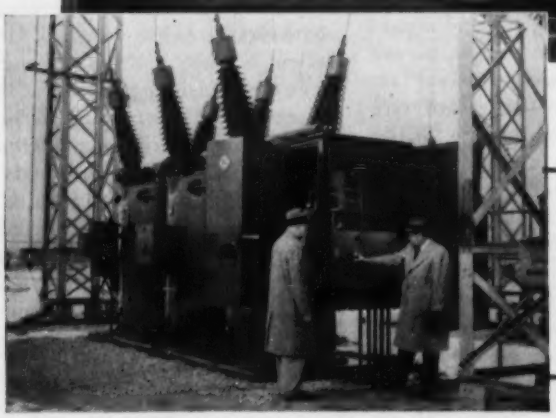
**Only 2 moving parts in hydraulic control...**
the spool valve and its control.

This simplicity of design was an important factor in the performance of *Pneu-Draulic* operators during the past year at an eastern power company. But this is only one part of the story of simplicity. It's simple to maintain as well.

Note the wide open accessibility — the short lengths of pipe — the few parts. In addition, the system eliminates basic causes for maintenance. Dirt hazard is eliminated. In effect, it's a sealed system with efficient filtering. Corrosion problems are reduced, since oil in the system uses one of the best corrosion inhibitors known. Moisture condensation problems are eliminated, since the system is filled with oil. Even manual closing is simpler, because provision for manual closing is built in.

Find out more about the breakers with the *Pneu-Draulic* operating mechanism. Call your nearby A-C office, or write Allis-Chalmers, Milwaukee 1, Wisconsin. A-4375

*Pneu-Draulic* is an Allis-Chalmers trademark.



**New Operator Mechanism Has Excellent Record**

Four 115-kv Allis-Chalmers circuit breakers at an eastern power company have operated almost a year with a total of over 4000 operations.

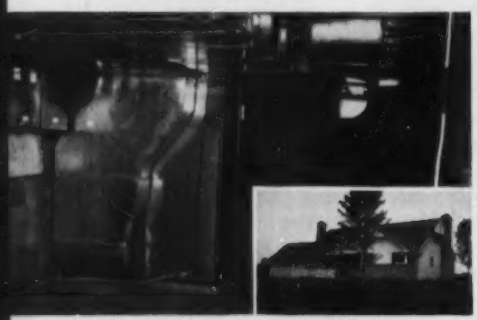
**ALLIS-CHALMERS**

A-C ALLIS CHALMERS

**NEW HOME INSTALLATIONS** of G-E Weathertrons provide utilities with chance to join G.E. in accurately predicting future home use, as discussed by G.E.'s P. F. O'Neill, Mgr., Utility Contacts, Weathertron Dept., and H. M. Brundage, General Manager, Weathertron Dept. For information on a metering program in your area, write General Electric Co., Section 301-230, Schenectady 5, N. Y.

## Weathertron metering program can spell out

# A new pattern for tomorrow's residential loads



**IN CANTON, OHIO,** one of many northern installations, growing popularity of heat pump underscores need to re-evaluate residential usage.

**IN BIRMINGHAM, ALA.,** as elsewhere in the South, metering of this heat pump shows winter heating consumption helping to balance summer cooling demands.

## Now specific data on system performance, kw demands can help extend range of greatest home load builder to many new areas

Now that many electric utilities are metering and analyzing actual home installations of General Electric Weathertrons—a program outlined by G.E., an answer is shaping up to the question: What will tomorrow's residential loads be?

### ACCURATE FORECASTING OF LOAD CHARACTERISTICS

Based on recording demand metering of many heat pumps, power consumption forecasts based on continuing the present growth rate take on a new significance. While heat pumps have already become popular in some regions, following the acceptance of room coolers and central air conditioning, their inherent year-round load characteristics can bring benefits to utilities in almost every area. Installations in Ohio are being metered right now and additional units and metering programs are under way or being planned for many other areas. These studies will give utilities factual information on serving Weathertron homes in their areas and thus broaden the base for future load growth.

### GROUNDWORK FOR DISTRIBUTION SYSTEM PLANNING

For areas where the Weathertron is now being used and in new areas where data is being weighed, G-E electric utility application engineers are translating the latest information to the optimum design of residential distribution systems. For utilities, growing acceptance of the heat pump coupled with G-E application engineering services opens a tremendous new field for load growth. General Electric Co., Apparatus Sales Division, Schenectady 5, N. Y. 301-230

*MORE POWER TO AMERICA*

GENERAL ELECTRIC

OCTOBER 1954 Vol. 113, No. 4

ELECTRICAL WEST

SPOKESMAN FOR THE MOST HIGHLY ELECTRIFIED SECTION OF THE U. S.

### Electrical West Manpower Survey Shows That

# Industry Must Recruit More EEs

Eight out of 15 largest Western utility organizations say they have "about enough" electrical engineers at the present time, seven say they need more right now. All companies that were able to project needs say they will require substantially more EEs in 1960 than they now employ. The 15 utilities reporting in a current ELECTRICAL WEST manpower survey represent well over 85% of the generating capacity of the 11 Western states.

To keep pace with utility system growth, the West will need 120 EEs a year at least. Another 35 or 40 must be found to replace those who will retire each year. Where are these 160 new EEs to come from? Neither utilities nor 15 Western engineering schools surveyed have an answer.

An earlier pilot study (EWEST, January 1954, p 59) indicated that one EE is required for every 10,000 kw of generating capacity. The current study shows that this "yardstick" figure is conservative, the complete survey reveals one EE for every 7,500 kw. Employment of EEs closely parallels growth of systems. The number of EEs in Western utilities doubled during the 1940s; by 1960 their number will be more than three times that of 1940.

Twelve of 15 utilities report that they have employed outside engineering firms, but only three feel that this has appreciably affected their own need for EEs. Five utilities say they depend less on manufacturers for engineering help than they have in the past, three feel they rely more on manufacturers.

Projecting the figures of the reporting companies reveals that there are probably 2,530 EEs employed by Western utilities at the present time, by 1960 at least 3,300 will be needed. If the 7,500-kw yardstick is maintained, the actuality is likely to be over 4,000 EEs employed in 1960.

Western engineering colleges graduated 382 EEs in 1954. Colleges estimate that by 1960 they will be graduating twice as many EEs. But in 1954 only 67 of these graduates, barely 18%, elected the "power option." And the colleges report that this figure is declining. If the percentage of EE graduates who show some predisposition for the power industry held steady, and if all of these entered the utility industry, there would still not be enough in 1960 to supply the demand.

If an average of 600 EEs are graduated in the West each year between now and 1960, as estimated by the colleges, and if, as at present, 18% are available to power companies, this means 108 EEs a year for utilities. This is not enough. When 800 EE graduates a year are achieved (more than double present levels), 144 will be available to utilities—*if* present decline in number taking power option can be halted and *if* demand by competing companies does not outstrip utility recruiting efforts.

Eleven of 15 utilities say they visit colleges to recruit EEs. Five report that they do some training of their own EEs. Three use employment agencies, two advertise. Two companies say they do some recruiting among precollege students.

Eleven colleges gave detailed figures on the number of companies who visit them in a search for EEs. These schools averaged 114 companies a year. The range was from 32 companies to 400, with a mean of 96 companies.

But seven of the colleges say that only one or two utilities visit their campuses each year. Two colleges were visited by 10 utilities, one reported five utility visitors and another three. Four schools, which did not give detailed figures, used generalized terms indicating that utility recruiting efforts on their campuses were negligible.

Engineering students are not looking to the utilities. The colleges in the survey report that 50% of their engineering students are most interested in electronics and radio branches of electrical engineering, 32% in mechanical engineering, 12% in electrical engineering and 6% in civil engineering. Students need to be sold on power company careers.

However, the appeals used by recruiting utilities seem to parallel the kind of inducements that the colleges think work best.

Seven of 15 utilities felt that "opportunities for advancement within their own organization" is one of their best inducements for attracting EEs. Six companies rely on the stability and security they offer, five feel that utility pay is attractive, four point to fringe benefits, four to working conditions and four feel that location and climate are important. Only one mentions on-the-job training as an inducement.

Eight of 15 reporting colleges feel that "interesting work plus opportunity for advancement" are among top inducements likely to influence their graduates. Seven say that pay is a top factor, four mention importance of location, three stress the students' desire for additional training opportunities. Three say that the reputation of the business is important to grads—its past performance and its future.

Young EEs want opportunity, utilities feel they offer opportunity. Young EEs are more interested in pay than utilities are in emphasizing it. Utilities stress security and fringe benefits but this is not a major factor with young EEs, at least in the opinion of the colleges. Young EEs are eager for opportunities to learn more, both on the job and by taking advanced courses; utilities do not seem to be taking advantage of this in their recruiting. Utilities are proud of their working conditions

## Here Are Results of Survey

### I. Information From Utilities

| | |
|---|---|
| No. reporting | 15 |
| Total capacity represented | 16,585,000 |
| Per cent of Western total | 87% |
| Total EEs employed | 2,187 |
| Kw capacity per EE | 7,500 |
| Estimated total EEs in all Western utilities | 2,531 |

### II. What Electrical Engineers Do for Utilities

| | |
|---|---|
| System planning and design | 34% |
| Transmission and distribution operation | 27% |
| Power plant operation | 14% |
| Sales | 9% |
| Management | 7% |
| Other | 9% |

### III. Other Kinds of Engineers Employed by Reporting Utilities

| | |
|---|---|
| Civil | 432 |
| Mechanical | 245 |
| Other | 185 |
| Total | 862 |

Estimated Total in all Western Utilities

| | |
|---|---|
| Civil | 500 |
| Mechanical | 290 |
| Other | 210 |
| Total | 1,000 |

### IV. EE Increase in Utilities Representing 26% of Total Western Capacity

1940, 365 (100%); 1945, 537 (147%); 1954, 958 (262%); 1960 (est.) 1,225 (335%)

### V. What EEs Earn

| | |
|---|---|
| Starting range | $3,410 to $ 5,810 |
| Starting mean | $3,960 to $ 4,860 |
| Starting average | $4,033 to $ 4,879 |
| Upper range (excluding management salaries) | $4,200 to $11,800 |
| Upper mean | $5,040 to $ 8,500 |
| Upper average | $6,712 to $ 8,813 |

### VI. Utilities Think These Are Top Inducements for Recruiting EEs

| | |
|---|---|
| Opportunity for advancement within company | 7 |
| Security and stability | 6 |
| Good salaries | 4 |
| Good working conditions | 4 |
| Fringe benefits | 4 |
| Location and climate | 4 |

### Colleges Say This Is What Attracts EE Grads

| | |
|---|---|
| Opportunity, plus interesting work | 8 |
| Salary | 7 |
| Location | 4 |
| Additional training | 3 |
| Past and future performance of business | 3 |

### VII. Colleges' Report

15 Western colleges graduated 382 EEs in 1954
9 of these (who awarded 241 EEs in 1954) expect to graduate 509 EEs in 1960—an increase of 112%
Only 67 or 17.5% of graduates elected "power option"

### VIII. Most Popular Engineering Courses Reported by Colleges Were

| | 1st choice | 2nd | 3rd | 4th |
|---|---|---|---|---|
| Electronics and radio | 8 | 1 | .. | .. |
| Mechanical | 5 | .. | .. | 1 |
| Civil | 1 | 1 | 2 | .. |
| Electrical | 2 | 1 | 1 | .. |

and are aware of advantages of locations; both of these factors carry weight with young EEs.

Eight of 15 utilities say they have some on-the-job training for EEs, only four have a special training program however. None require any course work or reading programs. Only five say they give no kind of training.

Utilities already recruiting can probably improve the quality of their "sales stories" in line with these findings by stressing the things most likely to appeal to young EEs. More utilities should recruit actively and present efforts should be expanded to cover more campuses, so that the industry as a whole will be more effective in spite of its numerical disadvantage in competition with others recruiting EEs.

Western utilities employ at least one other engineer for every 2½ EEs. About half of the others are civil engineers, 29% are mechanical engineers.

Some thought might well be given to encouraging students to take engineering courses in the first place. Nine of the colleges say they have programs for recruiting engineering students, only five have not. But only one college recruits EE candidates specifically.

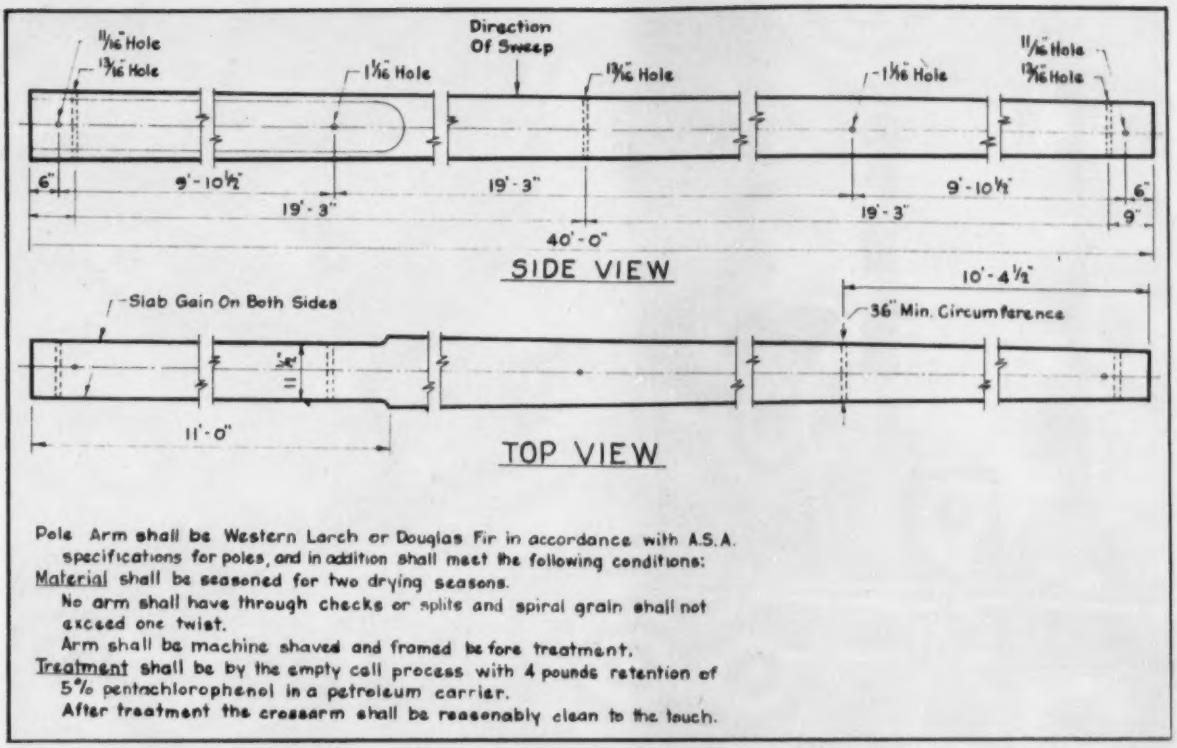
Four colleges agree that the best way to recruit engineering students is to feature pay and opportunities. No other appeal or method got more than one vote.

Starting pay for EEs in Western utilities ranges from $3,410 to $5,810, average is from $4,033 to $4,878, mean is $3,960 to $4,860. In upper range the spread is from $4,200 to $11,800, average for these senior brackets is from $6,712 to $8,813, mean of this group is from $5,040 to $8,500. Every reporting company offers benefits such as vacations, insurance and pensions.

Most EEs employed by Western utilities are in system planning and design, 34%. Another 27% are in transmission and distribution operations, 14% are in power plant operation. The rest is divided between management, 7%; sales, 9%; and other, 9%.

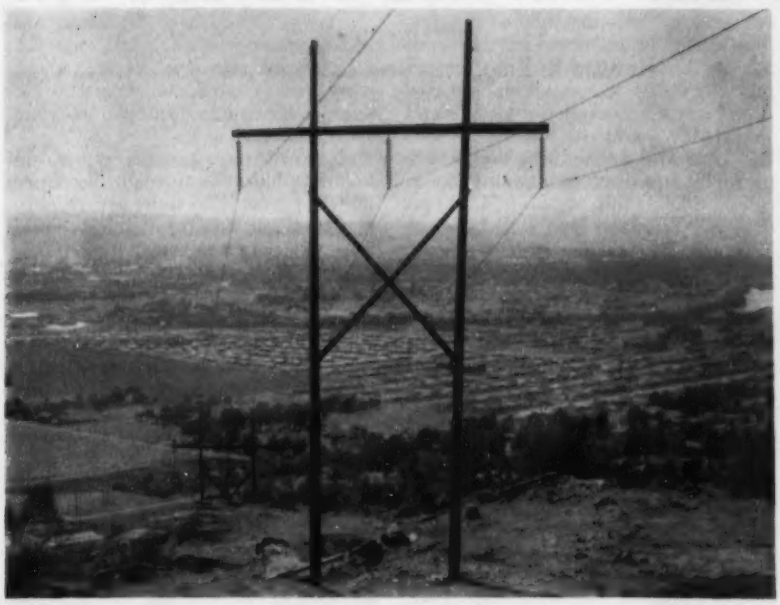
Figures on the annual turnover of EEs are mostly estimates. In 11 reporting companies the range was from 4% to 19%, with a mean of 8%. About one-sixth of the turnover is due to retirements. Some of the turnover is because of shifts of EEs from utilities to manufacturers and vice versa. No attempt was made to measure this because of the disparity in personnel accounting methods between companies.

This disparity was revealed in the pilot study and confirmed in the current survey. Actually only five of the 15 reporting companies could readily supply more than current data on their EEs, only four could supply 1940 data with any accuracy.


11/16" Hole
13/16" Hole
Direction Of Sweep
1 1/16" Hole
13/16" Hole
1 1/16" Hole
11/16" Hole
13/16" Hole
6"
9'-10 1/2"
19'-3"
19'-3"
19'-3"
9'-10 1/2"
6"
9"
40'-0"
SIDE VIEW
Slab Gain On Both Sides
10'-4 1/2"
36" Min. Circumference
11'-0"
TOP VIEW
Pole Arm shall be Western Larch or Douglas Fir in accordance with A.S.A. specifications for poles, and in addition shall meet the following conditions:
Material shall be seasoned for two drying seasons.
No arm shall have through checks or splits and spiral grain shall not exceed one twist.
Arm shall be machine shaved and framed before treatment.
Treatment shall be by the empty cell process with 4 pounds retention of 5% pentachlorophenol in a petroleum carrier.
After treatment the crossarm shall be reasonably clean to the touch.

**Framing details for 40-ft poles used as crossarms on new 230-kv H-frame line. Poles are full-length treated and machine shaved**

# Poles Make Inexpensive Crossarms



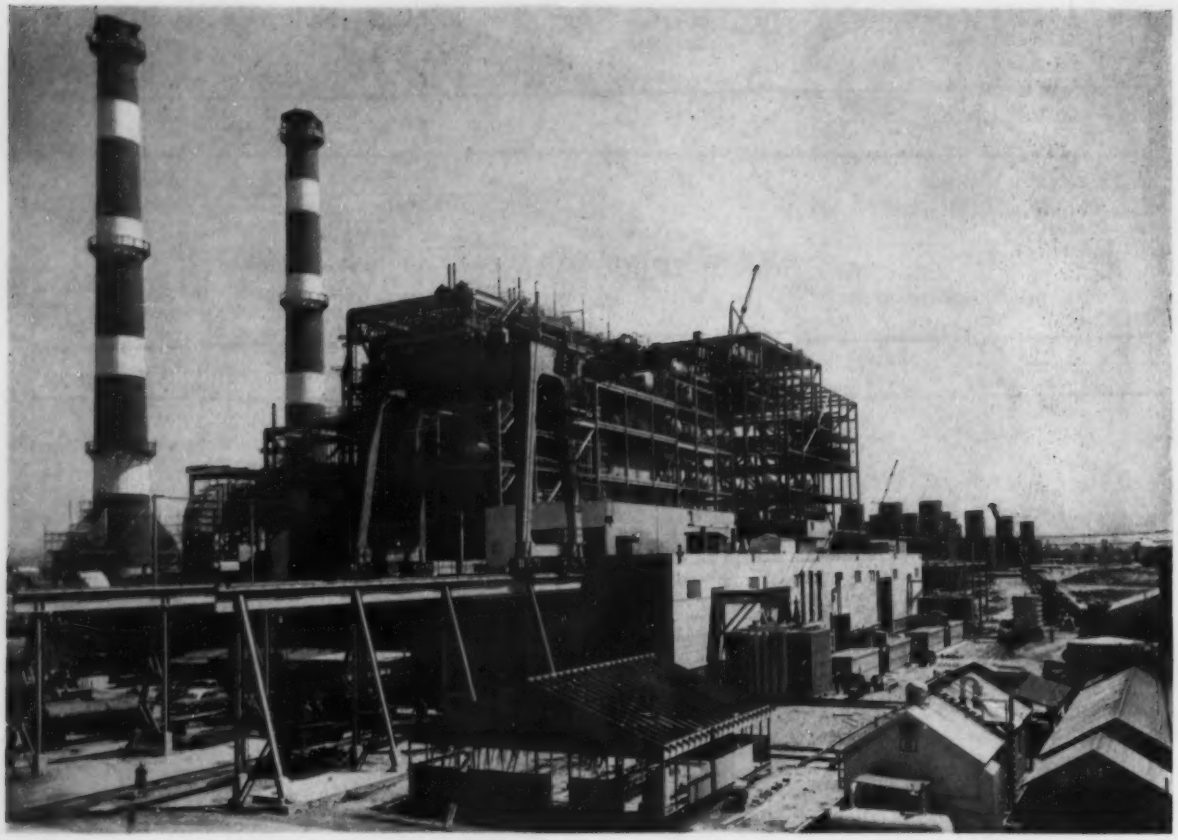
**Regular poles make economical crossarms and cross braces for 230-kv transmission line. Cross braces are attached with concave washers having projections that bite into wood**

A new economical type of H-frame wood-pole construction for 230-kv lines using regular 40-ft poles as crossarms and poles for cross braces has been developed by the Washington Water Power Co. The photographs show a line recently built, using this construction.

The pole-arms are 40-ft long, made of Western Larch, machine shaved and full-length treated with pentachlorophenal. The accompanying drawing shows details of framing.

The cross braces on H structures and jumper supports on three-pole dead-end structures are made of 30-ft class 8 Western Larch poles, machine shaved and full-length treated. Cross braces are attached to the poles with concave washers that fit the round surfaces of poles and brace, and have projections that bite into the wood. One cross brace is on one side of the two-pole structure and one on the other. No connection is made between the two at the point of crossing.

There is a marked trend toward this type of transmission line construction.



Two units for Valley steam plant of Los Angeles Dept. of W & P near completion as superstructure for third and fourth units rise

# Valley Steam Plant Will Add 500,000 Kw

**Howard R. King,** Station Design Section, Los Angeles Department of Water & Power

Placed in operation in August was the first of four new generating units under construction at the Valley steam plant of the Los Angeles Department of Water & Power. The plant is located on an inland site of 154 acres in the rapidly growing San Fernando Valley and when completed will represent an addition of more than a half million kilowatts to the present 1,131,000-kw system generating capacity.

Designed on a unit basis, the plant is of the semioutdoor type with four turbine generators arranged tandem and opposite hand in pairs, on a turbine deck 30 ft above ground level, 71 ft wide and 580 ft long.

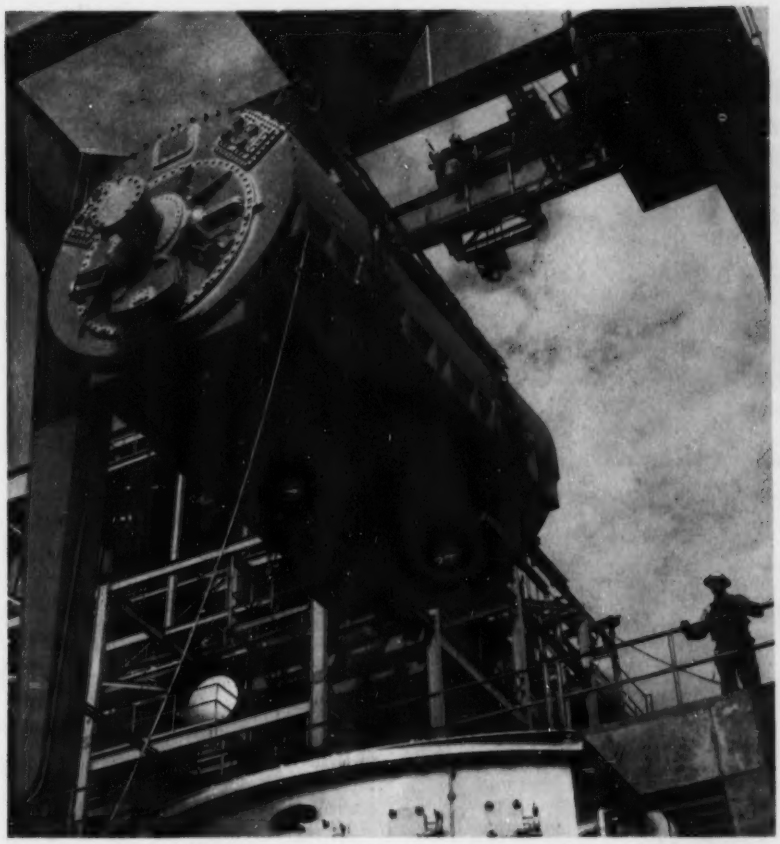
The unit placed in service is one of a pair of 100,000-kw, 13.8-kv generators, made by Westinghouse, driven by a tandem compound double flow turbine. Steam throttle conditions are 1,450 psi and 1,000 F. Steam is supplied by an outdoor radiant boiler rated at 850,000 lb per hour, 1,500 psi and 1,000 F, supplied by Babcock & Wilcox.

The second pair of units for the Valley steam plant are 156,250-kw, 18.0-kv machines with turbines of the tandem compound triple flow reheat type manufactured by General Electric. Steam will be supplied by boilers rated at 1,200,000 lb per hour, 1,850 psi, 1,000 F and reheat to 1,000 F. The boilers are being manufactured by the Riley Stoker Corp.

Each of the four generators is an outdoor, hydrogen-cooled, 3,600-rpm machine, equipped with a shaft-driven geared exciter. Excitation control is obtained with an impedance-type voltage regulator and rotating amplifier.

Generators are connected to the main power transformers by means of isolated-phase bus through disconnect switches only. The units are synchronized at 138 kv through oil circuit breakers located in a switchrack of the double-bus double-breaker design. Potential transformers and generator surge protective equipment are located in isolated-phase cabinets furnished integral with the isolated-phase bus. A connection for auxiliary power supply at generator voltage is likewise provided for in isolated-phase cabinets furnished with the bus.

Main power transformers are all three-phase units. Those for the two smaller generators are oil-air or forced-air cooled, rated 88,000-110,000 kva. Of the two transformers for the larger generators, one is oil-air or forced-air cooled, rated 140,000-186,667 kva, while the other is forced oil air cooled



Gantry crane places completely assembled 208-ton, 100,000-kw generator on foundations

and rated 186,667 kva. The transformers were designed with a basic insulation level of 550 kv and are equipped with lightning arresters rated at 109 kv. No spare transformer has been provided.

Energy from the new plant will be fed into the department's transmission and distribution system over three relatively short 138-kv transmission lines.

### Auxiliary Power

Cold start, general service and emergency auxiliary power is supplied at 4,160 v from an outside service transformer rated at 12,500 kva. The transformer is connected to one bus of the 138-kv switchrack through a disconnect switch only and is interconnected with the switchgear sections of the unit auxiliary power centers and a pair of general service 4,160-v feeders that supply miscellaneous general service loads throughout the plant.

The unit auxiliary power centers consist of a transformer and two sections of switchgear. The two transformers for units 1 and 2 are rated at 10,000 kva, 13.8 kv, while those for units 3 and 4 are rated at 12,500 kva, 18.0 kv. Each transformer is equipped with a neutral resistor designed to limit ground fault currents in the 4,160-v system to 2,000 amp. All switchgear in the 4,160-v system consists of electrically operated air circuit breakers rated at 1,200 amp and 5,000 v. Interrupting rating is 250,000 kva, a rating sufficient to permit the interruption of the fault current that can be contributed by the outside service transformer in combination with one unit auxiliary transformer. The 4,160-v power centers are all of the outdoor type with circuit breakers mounted in draw-out mechanisms. Control and protective equipment is panel mounted in the weatherproof cubicles.

Motor loads in excess of 200 hp are fed directly at 4,160 v, while motor loads of 200 hp and below are supplied at 480 v. The 480-v auxiliary power system is supplied from 500-kva sealed dry-type transformers. All are three-phase units, supplied from the unit or general service 4,160-v systems. Motors rated from 100 to 200 hp are supplied through electrically operated circuit breakers, while those of smaller size are supplied through control centers equipped with industrial control-type motor starters. Several specific isolated loads are supplied from 480-v power centers consisting of integral arrangements of transformers and switchgear. Included are the individual 300-kva power centers supplying the induced draft fans of the circulating water cooling towers and the 500-kva power center supplying the fuel oil handling facilities.

### Control Centers

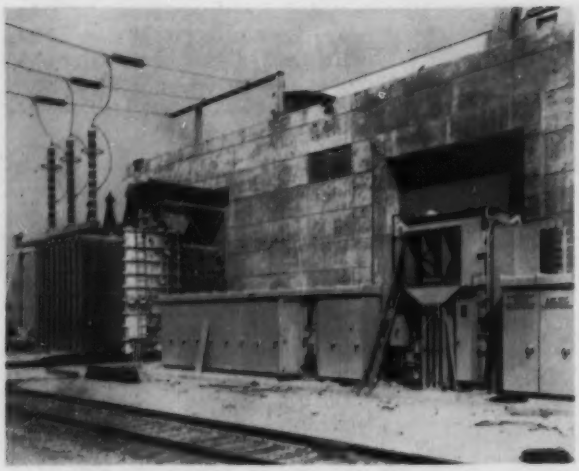
Two centralized control rooms are provided. One is situated between each pair of boilers and is located at turbine generator deck level. Control and instrumentation have been developed to a high degree within the control rooms to reduce to a minimum the operation of plant equipment at remote points.

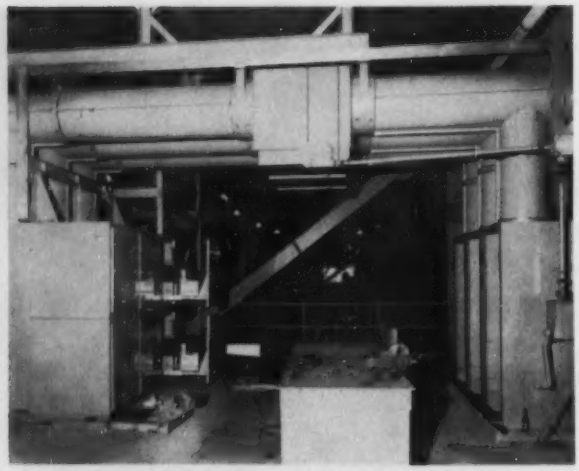
Controls and instruments utilizing both electric and pneumatic systems are employed, low-pressure air being used exclusively for the pneumatic components. Control rooms are air conditioned and equipped with full luminous ceilings that provide a high degree of light diffusion and seeing comfort with a noticeable absence of shadow or glare. The windows that provide a view of the turbine generator deck are tinted and mounted off the vertical further to reduce reflection and glare. Soundproofing has been incorporated as a design feature of the room.

Directly below the control room is the terminal room, its layout dictated by the arrangement of the control and instrument boards above. Terminal cabinets are ceiling mounted directly below the associated control room panel or board. Following the pattern of the terminal cabinets, a system of expanded metal cable trays is arranged to provide a maximum of flexibility in cable routing. The tray system and the platform that provides access to the trays and terminals are entirely suspended. This provides as much clear floor space as possible for the installation of equipment which, because of the nature of the connections or for convenience of operation, was located as close to the control room as possible.

While a considerable number of cables radiate from the terminal room at tray level, the majority are routed to a cable tunnel below ground level. From here they are carried in cable trays to the conduit duct lines through which they are distributed to the many auxiliaries and appurtenances throughout the plant and yard areas. Connecting the terminal room and the cable tunnel, a cable riser rack has been installed for the vertical support of approximately 1,000 multiconductor cables in a single layer.

The structures in which the control rooms are located also house the elevators and provide for the enclosure of such equipment and facilities as the boiler chemical feed systems, locker rooms for plant personnel, instrument





**Isolated-phase generator bus feeds main three-phase power transformer. Auxiliary power bus tap is made integral part of enclosed bus**

shops for the maintenance and calibration of the plant instruments and gages, communication facilities, battery charging rectifiers and approximately 50% of the 480-v switchgear. Included also are battery rooms from which glass cell batteries of 250, 48 and 24 v supply the d-c needs of the plant.

Advantage was taken of the structure supporting the turbine-generator deck to enclose a considerable amount of equipment at low cost by the addition of reinforced concrete walls on the three sides of the structure not occupied by the boilers. Economies have been achieved in the selection of much equipment of the indoor type that might otherwise have been of the more expensive outdoor type. Mounted in this enclosure are all of the turbine and generator auxiliaries including the unit lube oil circulation, storage, purification equipment, the generator hydrogen and seal oil supply systems, excitation control equipment, neutral grounding transformers and most of the generator bus with its associated appurtenances.

The enclosure provides protection also for such major auxiliaries as the boiler feed pumps, condensate pumps, condenser circulating water pumps and bearing cooling return pumps. The motor-operated valves of the boiler feedwater systems and the electrically controlled hydraulic valves of the circulating water systems are likewise situated within the enclosure. While many of these auxiliaries themselves are of such design as would have permitted an outdoor location, increased motor life may be expected because of the protection from moisture and foreign matter in the cooling air. Maintenance and overhaul procedures are simplified, and considerable savings were accomplished in the selection of instruments, controls and miscellaneous appurtenances associated with these auxiliaries.

### Water Supply

Raw water will be supplied to the plant from the Lower San Fernando Reservoir of the department's water system, supplemented by deep wells located at the plant site and on an adjacent transmission line right-of-way. Storage for 5,500,000 gal has been provided.

Boiler feed water and make-up of a purity equal to that of distilled water is produced at a rate of 100 gpm by means of an ion-exchange type of demineralization plant equipped with a vacuum deaerator for the removal of oxygen and carbon dioxide. Storage for 1,500,000 gal of demineralized water has been provided.

### Cooling Towers

Two cooling towers of the induced draft counterflow type are provided for each turbine-generator unit. The towers are of the multicellular type, made of redwood with reinforced concrete basins. Gravity water distribution systems are employed with individual riser pipes supplying water from a grade-mounted header. Two-speed motors are employed to drive the induced draft fans located in tall fan stacks designed to minimize the recirculation of saturated air. All fans of a single tower are arranged for common control at both high and low speeds.

Two groups of four towers are arranged on each of two headers, with each header supplying the cooling water for a pair of units. A separate tower of similar design and smaller size provides water for hydrogen and bearing cooling and for disposal of the heat load of all equipment requiring cooling except the main steam condensers. When completed, the cooling tower installation at Valley will be the largest of its kind in the world.

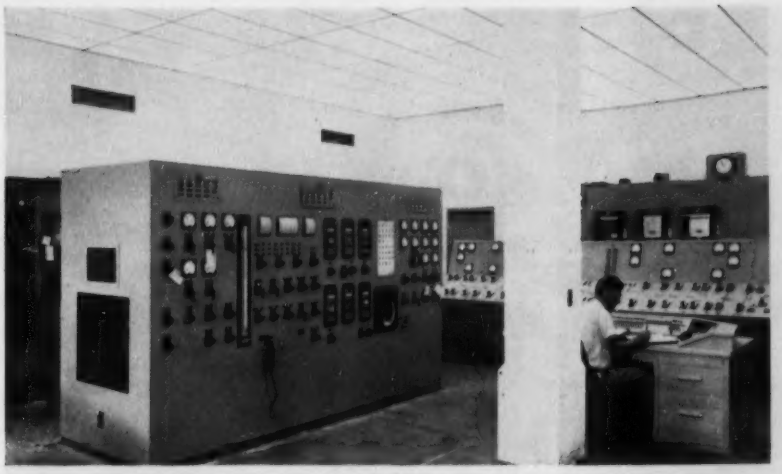
### Fuel

Primary fuel supply for the plant is oil. Storage for more than a million barrels has been provided, with provisions for delivery by rail car and truck. Natural gas is also supplied to the plant and will be burned when available at favorable cost. No equipment has been installed for the handling or usage of coal. However, space has been allocated for its storage and future installation of necessary equipment if its use as a fuel should become desirable.

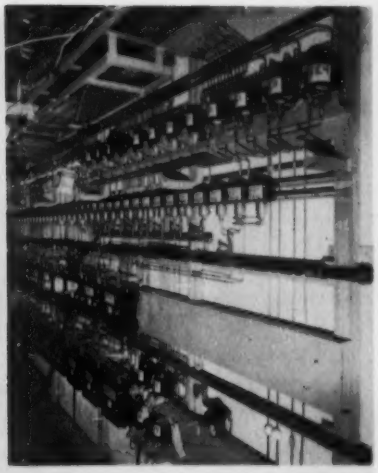
### Fire Protection

Automatically controlled carbon dioxide fire protection equipment has been provided for the lubricating oil systems, fuel oil service equipment, hydraulic servomotors, fluid drives and for the generator seal oil supply units. The automatic system is supplemented by carbon dioxide hose reels that provide wide coverage of miscellaneous small hazards. Water spray equipment provides automatic protection for the fuel oil heaters and manual protection of less hazardous areas.

There is a fire truck equipped with portable dry extinguishers and arranged to supply mobile foam and water protection in conjunction with a widespread water hydrant system. In addition, hand and wheeled portable extinguishing equipment provides effective weapons for combating fire. Dry stand pipes in the main structures and the yard hydrant system provide for effective utilization of the municipal fire department equipment.



Luminous ceiling gives excellent visibility of the instruments in centralized control room



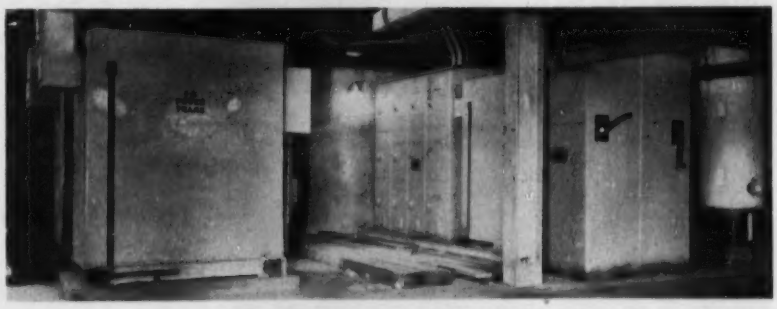
Pneumatic devices on walls of terminal room

### Gantry Crane

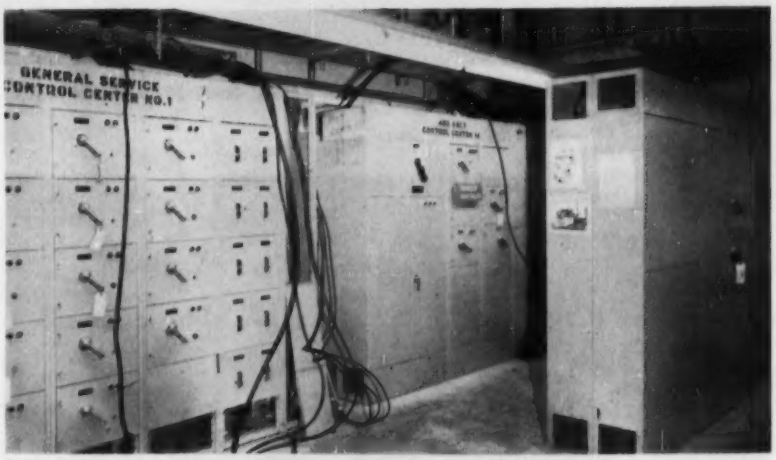
Because of the height of the turbine-generator deck above grade, location of the machine foundations relative to adjacent ground areas and the number of units to be installed at Valley, it proved economical to purchase a gantry crane of sufficient size to lift the largest load to be encountered during erection. This is the 225-ton weight of the 156,250-kw generator stators. This crane capacity made possible lifting the completely assembled 100,000-kw generators. Both of these machines were placed on their foundations a few hours after arrival from the factory; generator erection time was thus greatly reduced.

The gantry crane with its 225-ton main hook capacity is also capable of untanking the large three-phase main power transformers. Its availability for this service has already been utilized. The crane is also equipped with an 18-ton auxiliary hook which, in addition to its many uses during erection and overhaul of the turbine-generators, will service the high-pressure heaters of the boiler feedwater systems that are mounted vertically and extend above the turbine-generator deck.

Erection of the turbine-generators has been materially expedited by the use of a portable shelter constructed in four sections of steel frames covered with corrugated aluminum, insulated with thermacoustic and illuminated with adequate permanent lighting. The 10-ton sections are mounted on rails and move easily on ball-bearing wheels. Three sections completely enclose the smaller machines and four are required for the larger units. When not in service on the turbine-generator deck, the portable shelters will be lifted to rails on the ground and rolled to a storage area where they may be used for temporary storage or shop space. For use within the portable shelter, there is a small hand-operated gantry crane equipped with a chain block, wheel mounted on a separate set of rails. Rails for the shelter and for the hand gantry are temporarily installed and will be removed from the turbine deck when not required for erection or overhaul.

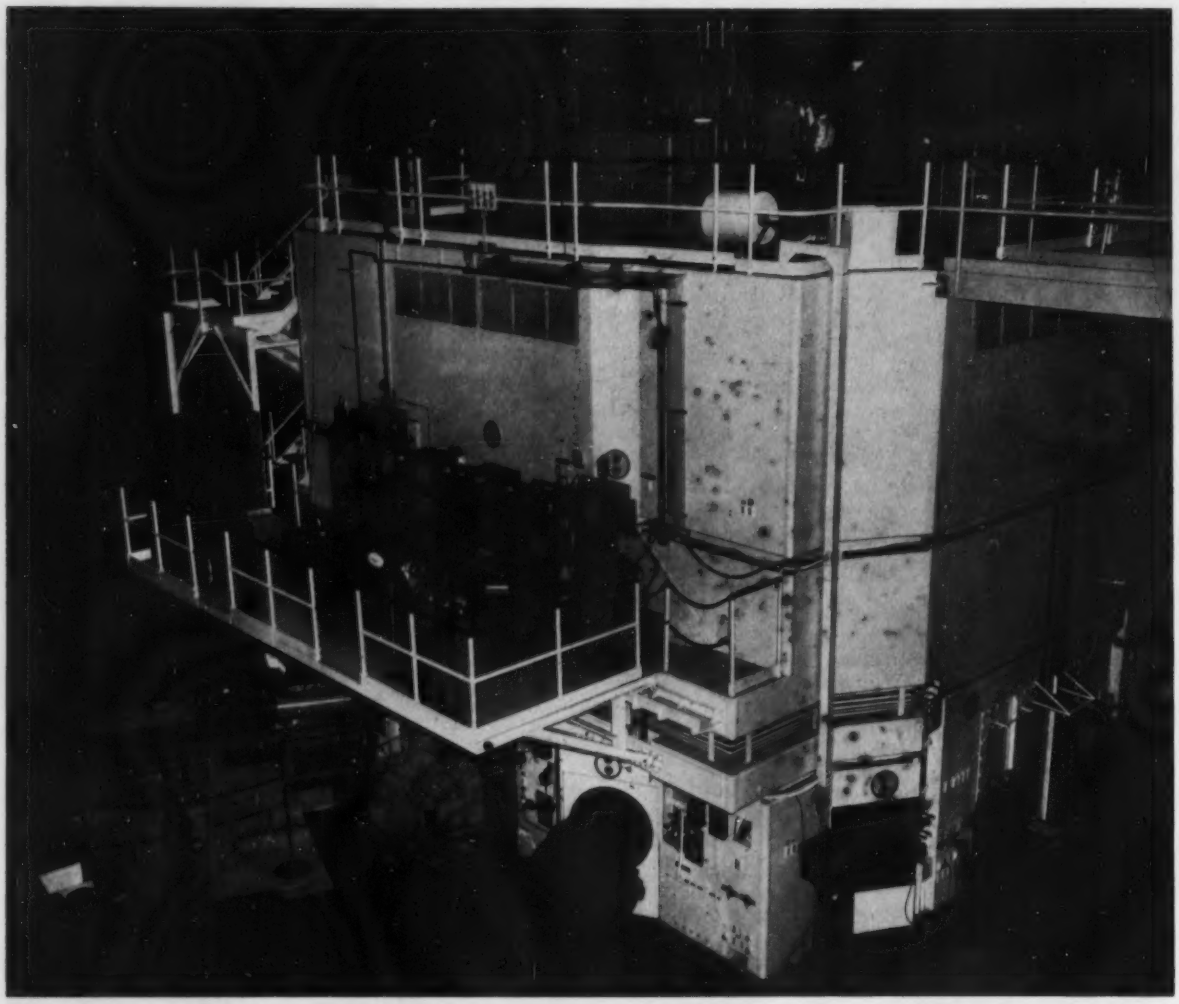


Dry-type 500-kva 480-v unit transformers are located directly below 480-v power center

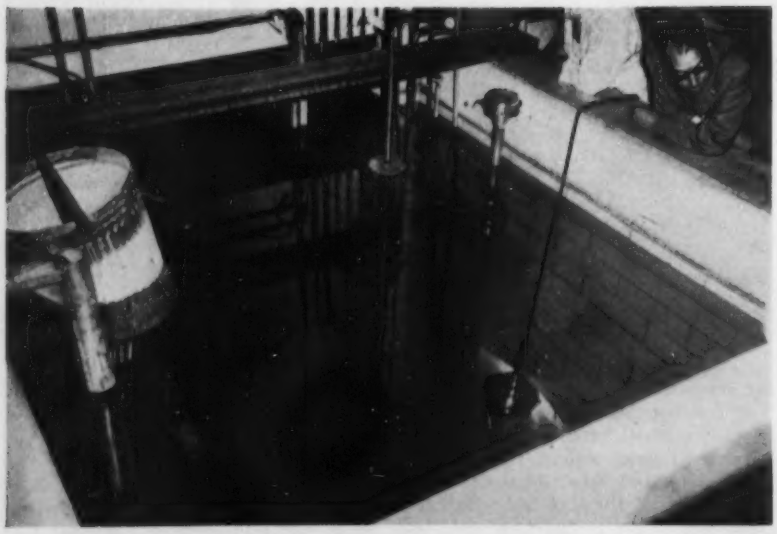



Metal-clad 480-v auxiliary power centers with control cables carried in the metal trays

At the rear of the boilers and 250 ft about the ground, the brick-lined reinforced-concrete chimneys with their broad red and white stripes stand as a new landmark in the San Fernando Valley.



First view of the materials testing reactor at Arco, Idaho, where 30,000 kw of heat energy is developed. Water and air are coolants

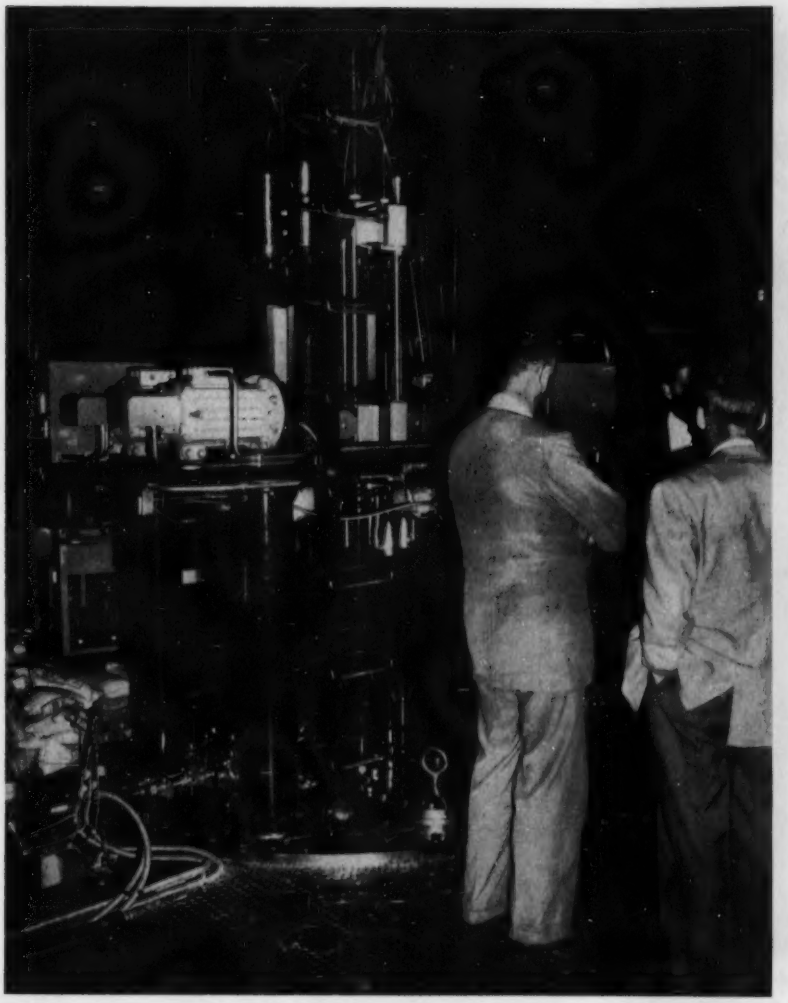


Water canal extending under the reactor provides a safe means of handling "hot" fuels

# AEC Removes

For the first time, an atomic reactor has been viewed by press and radio. The place was Arco, Idaho, where the AEC operates a materials testing reactor (MTR). This is also where the Mark I reactor is located, the land-based prototype of the Mark II reactor that powers the submarine *Nautilus* (EWEST, March 1954, p 72). Security wraps are still on this reactor located in another building.

The MTR shown produces 30,000 kw of heat energy and is strictly a test reactor. Heat energy is wasted to the atmosphere and water coolant. It is used to test the effects of intense neutron and gamma radiations on ma-



On top of reactor are the drive mechanisms for shim rods that control rate of fission

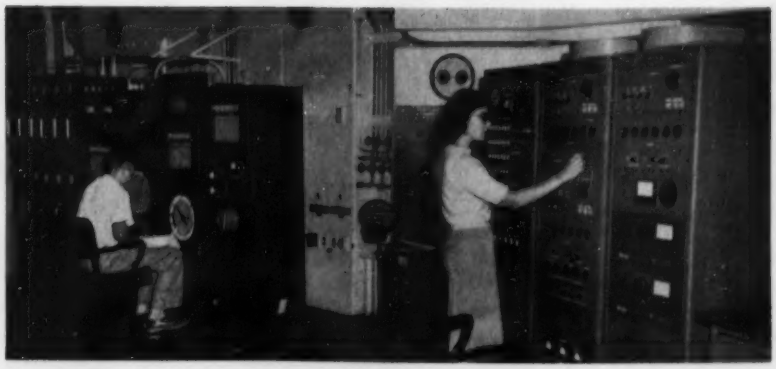
Special 4-ft glass shields hot test cells

# Wraps on Arco Reactor

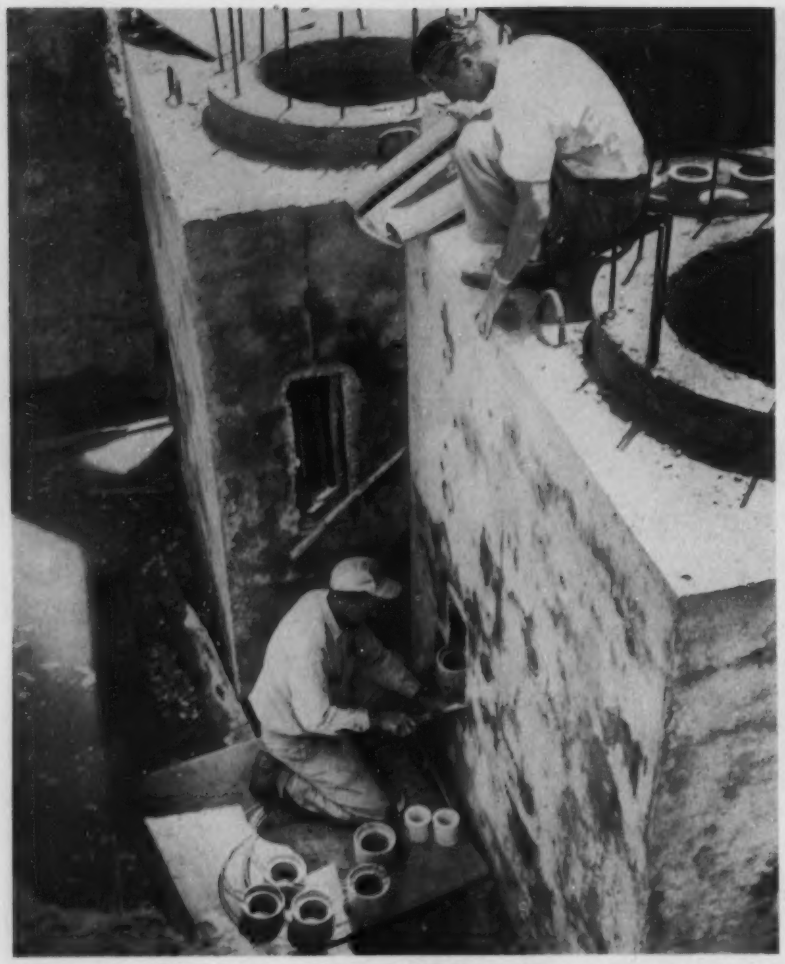
terials and fuel elements for reactors of high fluxes and specific powers; materials for reactors; different coolants, reflectors, moderators and shields. The experimental breeder reactor that produced the first usable electric atomic energy in December 1951 is also located on the 686-sq-mile site at Arco, near Idaho Falls, Idaho.

Those on the inspection tour expressed amazement at the high degree of instrumentation and complexity of controls required to operate this test reactor. For instance, there are five highly specialized controls in addition to the human element to prevent the reactor from running away, or operating at a dangerous rate. Servomechanisms, remote mechanical hands and electronic controls, never dreamed of before atomic fission, are required. Shielding materials of various kinds—special composition concrete walls, steel, lead, leaded glass and pure water—are used on every hand to prevent radiation harmful to operating personnel.

In short, the inspection tour served to show that an atomic reactor is a highly complex piece of equipment that must be operated with plenty of know-how and a very high degree of respect. The accompanying McGraw-Hill photos show points of interest.



Operation and control of reactor is watched with meticulous care on special instruments



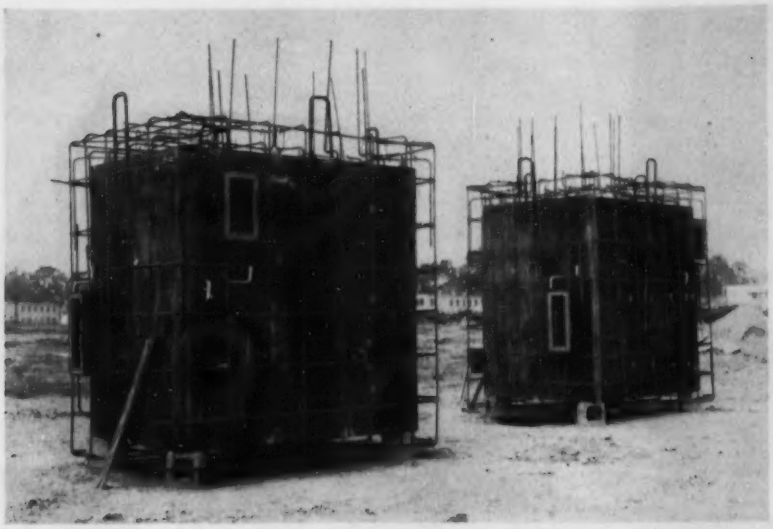
Designers of new Santa Barbara College plan complete underground system from very beginning. Precast double-compartment vaults separate power and telephone. With silty seepage, trench is pumped right behind trencher. Duct line was ready to be laid

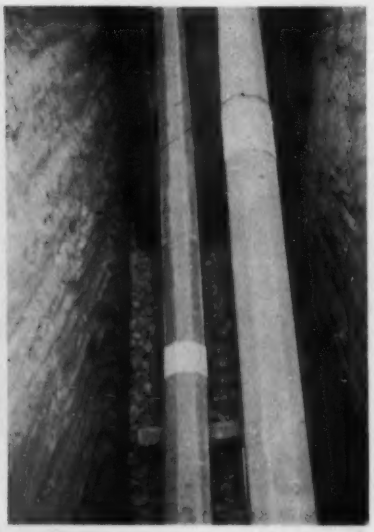
# This Is Electrical Forethought

Present capacity of substation is 2,500 kva. Primary is 4,160 v with 250 MCM PILC cable

Approximately 50,000 duct-ft of underground conduit, combining power and telephone circuits in one system, has been installed to serve the new campus of Santa Barbara College. The concrete-encased duct system will ultimately distribute power for a connected load of 7,000 kw, although as yet only four or five out of the campus' 26 buildings (plus fraternities and sororities) have been erected.

The site of the campus is on a high point 40-50 ft above the ocean at Goleta, Calif. A hard-pan stratum underlies the area prohibiting water runoff so that trenching for the un-





**Prefabricated manhole forms. About 30 manholes will be used. Right: In the wettest section pea gravel was laid as base for duct**

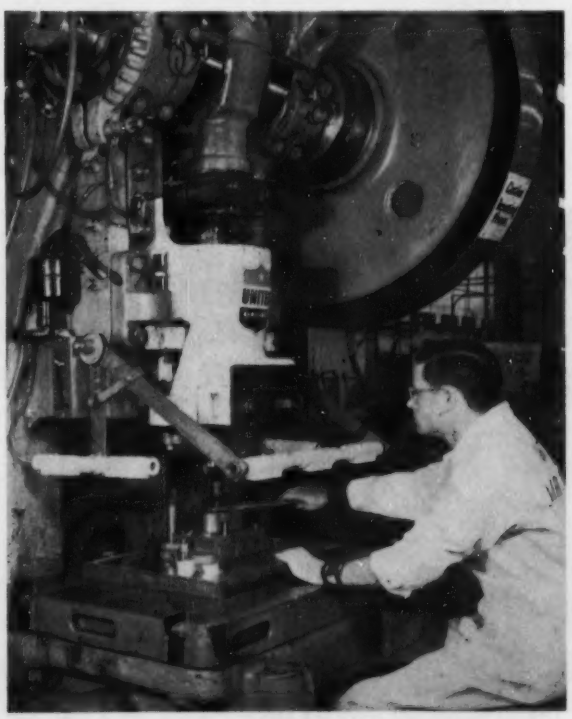
derground system was done in wet and mucky ground in several places. Many trenches had to be pumped. Where seepage was worst, it was necessary to lay a pea-gravel base in the trench, erect the duct at high speed and encase immediately. Special reinforcing-bar framework was included whenever duct passed under present or future roads.

Primary runs at 4,160-v, three-phase grounded wye using 250 MCM PILC cable are in 4-in. Oct-O-Duct. Telephone circuits are 400-pair lead-covered cable running in 3-in. Oct-O-Duct. In the majority of banks three 4-in. power ducts paralleled three 3-in. telephone ducts. All duct was spaced 3 in. horizontally; no spacing vertically.

At present, substation capacity is 2,500 kva; ultimately this will be expanded as the campus and load grow.

Manholes, which were 12 ft deep, were cast on the job, above ground, and lowered into position. They are made as a single unit but double compartmented so that power and telephone services are separated.

S. E. Eddy, senior design engineer for C. E. Mauk, electrical consulting engineer of Los Angeles, did all the original design work on the UC job.



**Radioactive bracelets lock press controls when hands are in danger**

# Radioactive Safeguard

Out of atomic research for peacetime purposes has come a new power press safety control designed to protect workers, reduce insurance costs and increase production. The device embodies the use of radioactive leather wristbands that work in connection with Geiger tubes to prevent the press from operating when the worker's hands enter the danger area. Such a control is used by United Air Lines on one of the punch presses at its San Francisco maintenance shops.

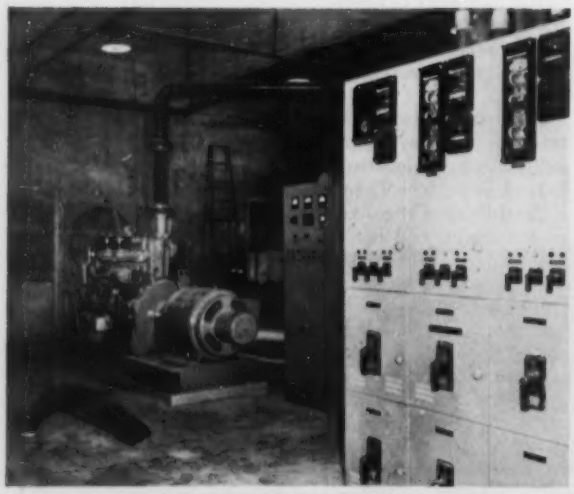
Adjustable leather wristbands worn by the operator transmit a steady multidirectional signal that is detected as they near Geiger tubes located at the boundary of the danger zone. The Geiger detectors activate an electronic relay that locks the press. Control relay contacts are wired in the clutch and brake circuit of a friction clutch-type press or to a treadle lock or overtravel device on a fast-acting pin clutch-type press.

The HC safety control, as it is known, even offers the operator protection against himself. A time-delay relay opens the control circuit to make the press inoperative whenever the tubes do not detect the wristbands at predetermined intervals. The same time-delay circuit protects against a possible failure of the Geiger tubes so that they will "fail safe."

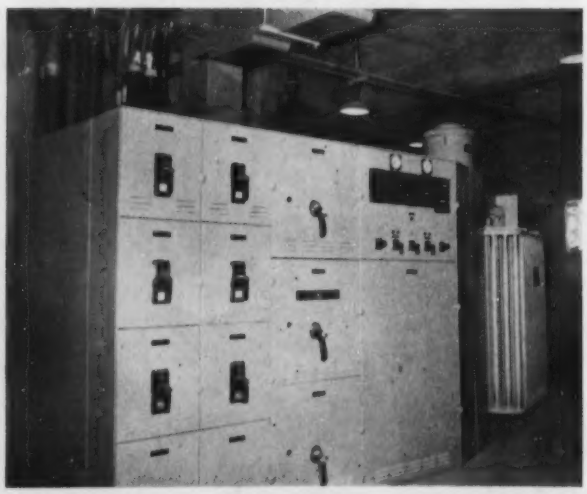
The Hazatrol Corp. of San Francisco, maker of the HC safety control, says that radiation level is below that considered safe by all standards that have been set up. Therefore, the radioactive wristbands are not dangerous.

Spacious main lobby ticket office area is lighted by coves and downlights; photocells control the window louvers automatically too

# When S. F. Airport Terminal Grew Up



One of two diesel engine driven generator sets to serve in power emergencies, and for light in control tower, exits, and for egress



Two 4,160/120/208 1,000-kva unit substations, 300 ft apart supply the six-story main airport building and concourses at each end

Like every airport in the West, San Francisco's municipal air terminal building, built in the mid-1930s, burst at the seams with increased air traffic and a $14,000,000 project, $6,775,000 of it for a new six-story building, has just been completed, Aug. 27. It serves the 12 scheduled airlines operating from it with 27 new aircraft positions, new concourses to reach them, new ticket offices and baggage handling facilities, restaurants and weather and Civil Aeronautic Administration offices.

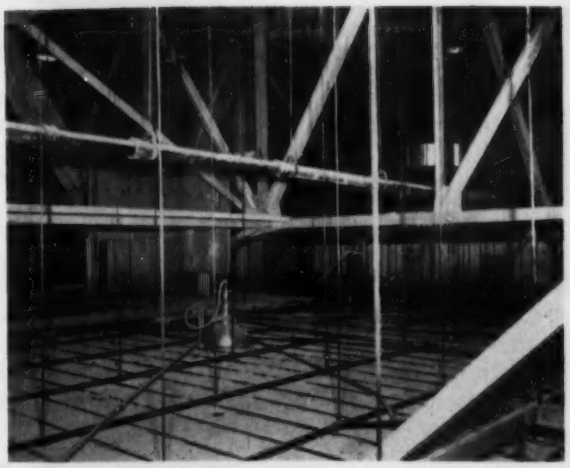
Architect W. P. Day and Albert Kritscher, supervising administrative electrical engineer for San Francisco City and County, had Clyde Bentley Co., consulting electrical engineers, design and Abbett Electric Co., electrical contractors, install electrical facilities as modern as the terminal is in all other aspects.

Service at 4,160 v is brought in underground from the substation to two unit substations of 1,000 kva each, spaced about 300 ft apart near each end of the main building. These contain 4,160/120/208, Pyranol-filled transformers. Three sets of feeders from the service building at the south terminate in high voltage sectionalizing boxes with primary selector fused S.E.-5 G-E switchgear. Two sets supply the terminal building and the two unit substations are intertied so that should power fail in one the other will automatically take over and if power fails from outside, relays start two emergency diesel engine driven generator sets. One has a capacity of 125 kva, the other 75, providing 200 kva for the control tower, weather station, CAA, exit and corridor and selected emergency egress lighting.

There is another 250-kva substation in the concourse and there are seven dry-type 480-v substations mounted on the piers of the concourse to supply power for engine starting sets through weatherproof plug outlets.

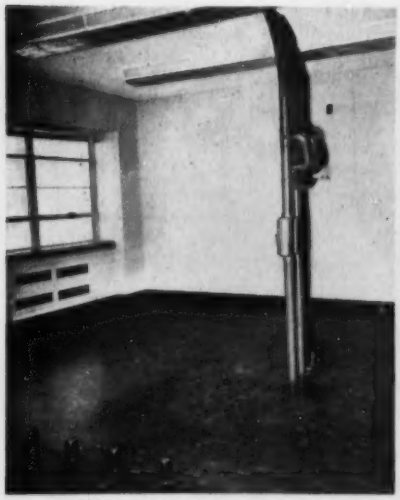
Lighting in the vast ticket lobby comes from two sets of coves, one with two rows, the other around the perimeter with three rows of slimline lamps in Alzak reflectors. In addition downlighting comes from 750-, 1,000- and 1,500-w incandescent lamps in Holophane high-bay louvered units mounted flush in the ceiling. Lighted signs atop ticket backgrounds and adjacent office machines are served from underfloor duct outlets.

In the CAA weather station room on the fifth floor cellular Q-floor provides channels for power, telephone, teletype and intercommunication systems. There are 336 speakers on the automatic public address system.

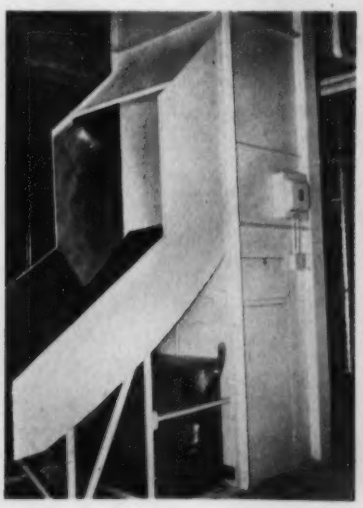


**Lighting panels on platform and 1,500-w units above lobby ceiling**

**Automatic recorded flight announcements, music and p-a system**



**CAA weather room served by 'floor taps**



**Baggage elevators from lobby to load dock**

**Bus duct feeds from unit sub to subpanels**

**Preplanned distinctive features for medium priced home**

1. Large oversized panel board, service entrance; circuits No. 12 or 10.
2. Dimmer controls on pinhole spots for dining and piano and music area, providing any level of hidden lighting desired.
3. Recessed up-lighting from slimlines in cove in fireplace mantel.
4. Five-way outside porch lighting.
5. Recessed slimline fixtures for hallway, playroom and den.
6. Blending of fluorescent and incandescent sources in bathrooms.
7. Three-way bed and wall switches for master bedroom lighting.
8. Shadowless light from multiple recessed lensed fixtures in kitchen.
9. Provision for future cove lighting in living room.
10. Front walkway post, planting box and porch lighting.
11. Future garden floodlighting—series of buried lead cables.
12. New 300-w sealed-beam high efficiency floodlights on outside.
13. Outside-inside thermostat system to control twin gas furnaces.
14. Built-in intercommunications—kitchen, children's room, shop.
15. Built-in music bar with multiple speaker, tuners, recorder, record player, monitoring speaker, plus television.

Charles Long shows ultraviolet germicidal and Odorout lamps in heating duct. Behind him is electronic thermostat heat computer

# These A-W Tangibles Can Be Sold

Who says there isn't something "tangible" to talk about and demonstrate as to the lighting and wiring of a medium priced home. For the average one on the market—perhaps not. But for one in which the wiring and lighting were preplanned there are many features that can be sold.

Take the home of Charles R. Long, Pacific Coast district engineer for Westinghouse Lamp Division, in Hillsboro. It is a 2,000-sq-ft Western ranch-style home costing about $21,500, the medium priced range. Yet the Longs were interested in achieving some lighting and electrical distinctions while staying within that budget.

Hall and planter lighted from louvered slimline ceiling unit; up-lighting from the mantel

Suppose you were a prospect for such a house. An informed real estate salesman, if he knew the story, could sell you with its electrical features if he showed you the home and described it like this:

Yes ma'am, almost every electrical and lighting convenience was either planned or installed when the house was built. Let me show you—

As we enter the hall—and you will find it also in the playroom and den—you will notice overhead that the practice of many of the best office lighting plans was used. The slimline lamps are recessed in the ceiling with an egg-crating of louvers to shield the eye from the direct viewing of light sources themselves. This also adds to the lines of the ceiling, making the hallway appear larger and roomier.

As we enter the living room, you will notice recessed in the top of the mantel two slimline de luxe cool white lamps under a frosted glass plate, providing up-lighting. This up-lighting gives a general soft diffusion against the room's ceiling, in addition to the direct illumination of the water color painting centered above the rock fire place. Switching for this recessed fluorescent fixture is controlled by four distinct switching locations, entering the room by two interior doors or either

**Up-lighting from fireplace flush inset unit plus the floor and table lamps supply living room needs; ceiling spot is for the piano area**

end of the patio's sliding doors. These lamps provide a good soft up-lighting, which is quite admirable for general room illumination during television viewing, causing no contrasting glare.

Over the piano and dining area table, you will notice, are two recessed and hidden spot lamps. This provides a clear unbroken ceiling, adding to the clean lines of the room and has the distinctive electrical features that they may be controlled to any degree of brightness by a variable dimmer. Over here on the wall you will notice the built-in wall dimmer which will permit, by the rotating of the circular handle there, any intensity of light level desired for the mood-conditioning of the occasion. (Dimmers have a capacity of 360 w each. This allows use by the family of 150-300-w reflector and projector types of lamps. A microswitch is connected within the dimmers so that the entire circuit may be opened at that end.)

The owners find this to be particularly dramatic when dining by candle light, as it is possible for the first time to reduce the illumination level over the dining room table to 10 to 20% of normal, so that the candle light may be the featured lighting. The mercury switch immediately to the right of the dimmer permits instant silent switching of the dimmed circuit on and off and will also allow for presetting of the light level before the guests arrive.

Here on the other side of the living room, we have a five-way outside porch light switching, so that the lights on the porch and patio may be turned on from the bedroom, playroom, and two positions in the living room. This allows for convenient switching of light ahead from any of several entrances.

Overhead incandescent or fluorescent lamps, recessed for the bathroom, are supplemented by de luxe cool white fluorescent lamps down either side of the cabinet mirrors. By using the new instant start, low noise level ballasts, one no longer waits for the light to come on.

To provide shadowless lighting in the kitchen, you have probably observed that there is a series of incandescent recessed fixtures with the glass lenses, so placed that a rectangle of light is formed. This generally guarantees that there will be no appreciable shadows in the kitchen working area and that all principle work surfaces will receive their share of good downlighting from the recessed incandescent fixtures, equally distributed. Two recessed 150-w fixtures are located over the 96-in. stainless-steel double sink. Two more are spaced, one on either side of the electric range.

On the outside lighting, particularly about the front of the house, we find the better practices of drive and walk-way combination lighting by the use of four different source locations. Beside the front door is found the usual

**Candlelight atmosphere for dining aided by ceiling spot for seeing was preset by the hostess at the wall-mounted dimmer near the door**

**Post lamp, spots on entrance and shrubs light and welcome guests. Patio is floodlighted from the corners and from well-lighted interior**

front door fixture. Supplementing this, mounted on the wall of the house, directed towards the walk and the planting bed, can be found two of the outside type of bullet luminaires. These use the outdoor type of self-contained reflector lamp, such as the 150PAR38, 300PAR56, etc., so that when employing the flood type a wide illumination pattern of area lighting may be achieved. Beyond the curved drive, a lamp post with its frosted chimney enclosing a 100-w lamp provides a general diffused flood lighting.

Recently a new 300-w self-contained flood lighting lamp was introduced on the market, resembling your automobile's sealed-beam headlamps. Two sets of two lamps each, mounted back to back at the corners, will flood all sides of a house instantly with high-intensity protective lighting. Needless to say, switching of the outside floodlights must be so arranged that they may be turned on quickly when conditions warrant. They are also useful for garden plantings after sundown.

**Back-to-back corner floodlights; also outside temperature anticipating thermostat**

To provide for future outside lighting needs, the owners planted three sets of buried lead-covered cables inside half-inch conduit pipe, a foot or more below the surface of the yard. These cables are carried out to a terminal box and are coiled up at the present time but someday may be used for the outside barbecue, a supplemental yard light or a convenience plug may easily be added. To install these units during the house construction period is a relatively simple matter.

This panelboard, madam, is the heart of the home. It is from here that the electrical life blood circulates to all parts of the house. Its 24 circuits provide for electrical dish washer, range, bathroom heaters, refrigerator and lighting. Four spares are provided for future cove lighting about the living room and valance lighting in the kitchen. And number 10 or 12 wire was used throughout. This house was designed to meet Adequate Wiring Specifications, that is, a sufficient number of convenience outlets, properly located, plus electric bathroom heaters.

An interesting additional electrical feature is the use of the Moduflow electronic thermostat system, whereby an outside "sensing" thermostat, working in conjunction with the inside electronic chronotherm and through a balancing amplified network, automatically feeds advance informational signals to the furnace as the temperature on the outside commences to drop. Thus this "electronic brain" starts up the heating so that you do not feel the chill inside before its thermostats operate. There are two counter-flow furnaces tied together, yet each may be controlled independently by a separate thermostatic system or as a single unit. One supplies the living and dining area, kitchen and playroom; the other the bedrooms.

Above the furnaces, an extra large plenum chamber was constructed to house two ultraviolet lamps (1,000 hour, cold cathode, instant start Sterilamps). One of the lamps was designed for the sterilization of the air and is called a Sterilamp and kills off microorganisms and bacteria being circulated by the furnace's forced-air fans. The second lamp, even though appearing like the first, produces a shorter wave length ultraviolet and is designed to eliminate odors. This Odorout lamp actually causes a free molecule of ozone to be made available and, as ozone is unstable, it combines with the various odors which might be picked up from kitchen, the living room poker game, smoking and the like, either reducing or eliminating the odor as it combines, changing its chemical property. Both lamps are connected by relays to the blower fans, so that they will turn on and operate only when the blowers are functioning.

Rather interesting is an intercommunication system that was installed for this middle priced home. The master unit is placed in the den, remotely located from the main part of the house for quietness, with the slave units mounted, one built in a kitchen cabinet and the second over the hallway in the bedroom wing. By use of convenient switchings, it is possible from the den to hear any sound from the children's rooms at night or to talk freely with the wife doing chores in the kitchen.

Switches, wiring and convenient outlets were built in the back of a music bar, to handle a built-in high-fidelity amplifier and tuner units, as well as a tape recorder and associated equipments. Built-in four-conductor wiring was placed about the house so that multiple speakers could be connected into the master amplifier in various rooms, providing for background music during periods of rest or relaxation.

You say that you like the house, ma'am, and would you like to have one like it?

Ben Wheater, Long Beach chief inspector (taken at his own Southern California Chapter meeting), became the next president as the . . .

# S. W. Inspectors Take Convention to Elko

By one who wasn't there to others who couldn't be there either, this summary of what, besides fun, took place at the Elko, Nev., annual meeting of the Southwestern Section, International Association of Electrical Inspectors, Sept. 13-15, is prepared after considerable Dragnet work on a few who were there but can't remember what happened.

If the details are lacking, the main events can be chalked up as follows:

1. Very little in new code changes was submitted or voted.

2. A new method of handling questions was tried out.

3. There were very few speeches, lots of discussion, but very few definite conclusions.

4. Good attendance considering distance, scattered hotels and meeting places. Total 175, 129 men, 46 wives.

5. Charles Smith, IAEI secretary-treasurer, couldn't make it either because of illness. Everett Cogan, his technical assistant, served in his stead very well.

6. Ben Wheater, Long Beach chief inspector, moved up from first vice-president to president. Next annual meeting will be at Arrowhead Springs.

7. The revised bylaws, to match those passed at Chicago last year, were adopted.

8. Washing machines (possibly automatics) are up with refrigerator motors as a leading cause of electrical fires.

9. Inspectors still want the type S fuse to be made mandatory.

10. Opinions still differ as to how to install built-in ranges with separate components.

11. M. E. Lundberg, convention chairman, and his committee, representing all branches of the electrical business in Nevada, were wonderful hosts and provided real old-time Western hospitality.

After being welcomed by Charles H. Russell, governor of Nevada, no less, and Bing Crosby's friend, David Dotta, mayor of Elko, the first day's session covered the usual preliminaries of introductions, presidential addresses and reports of the several chapters of the section.

IAEI President B. A. McDonald, Rochester, N. Y., now retired Underwriters' inspector, spoke briefly of the value of the association, referring to many of the local activities of the Eastern Section. He praised the Underwriters' Laboratories as a sincere, hard working and thoroughly unbiased organization upon which inspectors depend for testing and listing of all the materials and appliances used by the industry to deliver electrical service. Underwriters' Laboratories was well represented. President Curtis Welborn, Vice-president M. M. Brandon from Chicago, attended as did O. G. Wedekind of the San Francisco Laboratories, Charles Brooke, Western superintendent, and Henry Chateau of Los Angeles.

E. E. Carlton, president, Southwestern Section, supervising electrical engineer, Department of Industrial Safety, State of California, likewise had a brief presidential talk, stressing the need for participation by the membership in chapter activities. He also urged that efforts be made to give attending inspectors actual answers to the problems they bring before the chapters and sections, because that is the purpose of their attending.

Still urging more complete and detailed reports so that the actual causes of electrical fires could be determined, Harry L. Dobson, chairman of the committee on fires of electrical origin, detailed the response from 55½% of the cities to which questionnaires had been sent. He noted that this year a new cause of fires was reported in a surprisingly large number of cases. This was "washing machines." Eight cities reported a total of 69 washing machine fires, making 3½% of all fires reported. However, no details were given as to whether the fires were in the motors or in the control and timing equipment. Those who reported all fires, he said, indicated that those charged to be of electrical origin made 19.12% of the total. Television receivers likewise had a large number of reports.

Window air conditioners will now meet the requirements of the National Electrical Code, Henry G. Strong, representing the Air Conditioning & Refrigeration Institute, Washington, D. C., told a luncheon meeting. He said the manufacturers have come to agree to comply with the code as to the ratings of window air conditioning units and have discussed with the Underwriters' Laboratories the requirements necessary for their use on the wiring systems that meet with the National Code. Underwriters' Laboratories has just issued a new standard for room air conditioners, after a study of the situation.

A talk on "Modern Miracle, the Transistor" was given by J. N. MacKinnon of Bell Telephone Laboratories.

Major topics of the code breakfast and during the code discussion sections included built-in ranges, type S fuses, circuit breaker interchangeability, fixture wire and feeder computation where several motors are used.

As to built-in ranges, differences of opinion existed and no conclusion was reached over whether the single range circuit permissible for a single-unit range could be used when serving built-in ranges with separate top, oven and griddle in different parts of the kitchen. These are listed as separate units by UL. Some require three separate circuits, others permit the three to be grouped on the range circuit, especially in existing installations where remodeling is being done.

Cogan asked for a vote from the inspectors as to acceptance of interchangeable circuit breakers where one of a larger rating can be plugged in, in place of one of a smaller rating. A few inspectors told of cases they had found where this had been done.

Two changes to the code were voted.

LaFehr Cogan

Carlton

The first was to add to Par. 4372-d these words: "Completely isolated control circuits may be ungrounded providing the control voltage does not exceed 125 v between any two conductors and providing the transformer supplying this circuit meets the requirements of Art. 725." Another applied to variable voltage generators and would make an addition to Art. 445. Voted unanimously was a request to delete the fine print note after Sec. 2452 and thus make the type S fuse mandatory.

A proposal to identify neoprene-jacketed cables with a color stripe was approved. Another proposal to make changes to Art. 500 regarding definitions of flammable liquids, etc., was rejected as adding to the confusion.

An attempt was made to apply the conference technique first used so successfully at a recent building officials' conference, but it met with only partial success. Pat O'Leary, Berkeley city inspector, headed a committee to attempt it. A sheet of paper with a list of topics on field inspection and public relations was distributed. The group was asked to write on individual slips of paper ideas on such items as "how to organize your day's work as an electrical inspector" and "how to fit into your building department." Although answers were received and will be coordinated for a later report, the idea was too new for success.

Henry Etchemendy, chairman of the Nevada Chapter, Elko, gave a talk at one section on the problems of a small-town inspector. At another, H. W. Lindsey, manager of California Pacific Utilities at Winnemucca, called for comments from several speakers on state inspection for Nevada.

At the election of officers, Ben Wheater, Long Beach, was advanced from first vice-president to president; J. M. Ambrosi, Oakland, to first vice-president; F. C. Jones of Phoenix was elected second vice-president; and L. E. LaFehr, Alhambra, re-elected secretary-treasurer. H. G. Ufer and A. C. Veit were elected as representatives on the executive council and on the executive committee are Ray Colby, Fresno, Central California Chapter; M. E. Lundberg, Elko, Nevada Chapter; Harry Dobson, Santa Barbara, Southern California Chapter; Clarence Jarvis, Sacramento, Sacramento Valley Chapter; Virgil L. Mulkey, Phoenix, Arizona Chapter; E. Warren Small, Honolulu, Hawaiian Chapter; Ernest Nelson, San Leandro, Northern California Chapter, and Ray Blakeman, manufacturer, associate member.

Members of the general convention committee under M. E. Lundberg, general manager, Elko-Lamoille Power Co., included W. W. Gregory, W. W. Murdoch Jr., Robert R. Jackson, Jay R. Kump, Prof. Irving J. Sandorf, University of Nevada, Henry Etchemendy, A. L. Vizina, Milo Taber, Norman Magin, Merle Trehall, J. Hyde Stayner. Robert L. Osborne Jr. of Reno handled the displays and advertising.

## Northwestern Section Report to Come Next Month

A full report on the annual meeting of the Northwestern Section, IAEI, held at Portland, Sept. 23-25, could not reach us in time to be included in this issue. Prepared for us by Clare S. Alger, secretary of the Puget Sound Chapter, it will give the results of the proposed code changes and the views expressed regarding a number of code and inspectors' problems. Attendance was about 150 with an additional 40 ladies. Presiding was John R. Crawford, city electrical inspector of Butte, Mont., section president. Program was arranged by W. L. Gaffney, Tacoma's chief electrical inspector and secretary-treasurer of the section for many years.

# ELECTRICAL WEST Contractors' News Letter

**QUICK NEWS ON TRENDS, LAWS, CODES, MATERIALS, EQUIPMENT, COSTS, WAGES, ETC.**

**From the IBEW and the AFofL conventions** can be forecast next year's demands when negotiations reopen. Although pretty generally in the West now there are no good men on the bench in any union hall, for construction is brisk lately, spotty unemployment earlier gave rise to the new drive to be made for a shorter work week at the same total pay next year. The AFofL bases its demand on technological improvements that increase production, but as Ed Buttner, NECA vice-president, told the IBEW at a San Francisco meeting, that isn't true in electrical construction. Instead, because of poorly trained journeymen, productivity is less though pay is higher. NECA President Don Clayton told the IBEW convention high labor cost has lost most of the small residential, commercial and maintenance business to nonunion labor and the do-it-yourself trend.

**Distant thunder**

**J. Scott Milne,** elected without opposition, urged keeping the eight-hour day but shortening the work week to four days at five-day pay. Delegates voted instead for a six-hour day, 30-hour week . . . Another action voted was to return unqualified journeymen to helper or apprentice grade to guarantee employers competent men.

**Platform**

**Attack on the do-it-yourself** trend will be made by San Francisco Electrical Contractors Assn. by using National Electrical Products cartoons as ads which the association asks Northern California Electrical Bureau to sponsor. The cartoons are to run each Sunday in the Examiner's "Modern Living" magazine section for eight weeks beginning Oct. 3.

**Warn public**

**Square D Co.'s strike** over jurisdiction between UEW and IUEW was finally settled after violence when the plant was reopened in Detroit.

**Over**

**A new tight constitution** that would place the policy and personnel of the National Electrical Contractors Assn. in the hands of the board of governors, instead of its administrative committee or its members, is to be voted on at the national convention in New Orleans, Oct. 25-30. If it passes it may be the last membership vote on any subject on the convention floor, for under it all changes in bylaws, election of officers, and adoption of policies or procedures will be made by the board of governors in the future. This is probably sincerely proposed by the present administrative committee on recommendation of the management consultants engaged to design a new structure for the association. It is the familiar corporate structure used in business concerns. The question of whether it is desirable for an association if it is to remain democratic will have to be decided by those who attend and vote.

**Drastic change**

**Other issues involved include:** a new "associate membership," without vote, to be offered line contracting firms (others such as general contractors might also qualify) who do some electrical work but whose principal business is not electrical; conventions at least every two years—more importance to district meetings; a new dues structure.

**Other changes**

**Dues would be a minimum of $50** a year per member plus a service charge of 2/10 of 1% of productive labor pay roll, which is redefined to mean straight time only. This will increase the national dues paid by a chapter for a minimum contractor about $20 but lower the dues of those in the medium and upper brackets. The cash discount is eliminated. Chapters will feel the new plan most where membership of small shops is more numerous, as in many sections of the West. It may also decrease the incentive to seek more small-shop membership.

**Different dues**

**In San Diego a "construction practices board"** is being set up to sponsor a code of fair practices between the generals and subcontractors. On it are four general or building contractors and five subcontractors representing electri-

**Ethics board**

cal, sheet metal, plumbing, lathing and plastering and painting and decorating contractors associations. A. C. Eddy represents San Diego NECA and is vice-chairman. The code defines fair bidding procedures, both by the general contractor and the subcontractors and hearings will be held on any violations.

**Persuade instead**

**Some good came out of NECA's effort** to have a federal construction act passed although it was never given a chance on the floor of Congress. The Associated General Contractors has restated to all its members its code of ethics. A form has been prepared containing five rules for fair bidding, which it asks general contractors to sign and send to specialty contractors invited to bid. While voluntary, it may have an effect in reminding AGC members that it is a golden rule.

**Test data**

**"Aluminum Building Wires and Connectors"** is a new bulletin of research, No. 48, just issued by Underwriters' Laboratories and covers an investigation to find the performance and problems connected with aluminum building wire, solders, pressure-wire connectors, corrosion, heating, etc. . . . Revisions have also been made to standards for lighting fixtures, cartridge fuses, portable electric lamps and service cables.

**Merge services**

**A. E. Rowe Co.** has sold to Biddle Trade Bureau its electric price book and the latter will publish it from its Los Angeles printing plant. Arthur Rowe started the first price book service in San Francisco over 30 years ago. Biddle Trade Bureau has published a pricing service from Los Angeles since about 1927 and now has both a contractors' and a wholesalers' pricing service. Recently it established an eastern service called "Trade Service Publications" in Chicago. Arthur Rowe, while retiring from the book publishing, will remain custodian of the bid depository for awhile, he says. Biddle Trade Bureau will have a representative in the field in northern California after the first of the year.

**Light course**

**An evening course in practical illumination** has been started by the Illuminating Engineering Society Northern California Section, beginning Oct. 5 in Oakland, Oct. 6 in San Francisco, Oct. 7 in Fresno. The course of 10 classes, two hours each, will run into mid-December. John S. Walsh, PG and E, is chairman of the education committee with Milton C. Very, Fluorescent Fixtures of California, vice-chairman. Ray P. Benton is Oakland chairman, Frank E. Duhme, San Francisco chairman, and J. E. Hammond, Fresno chairman.

**Put him to work**

**William M. Hogue** of Larsen-Hogue Electric Co., Los Angeles, past president of the National Industrial Service Assn., has been named general chairman of the 22nd NISA convention that will be held June 6-10 at Los Angeles Hotel Statler.

**Electrify the week**

**National Electrical Week** is going to be observed by the Northern California Chapter, International Association of Electrical Inspectors. It has an active committee under Carl Tober of Marin County, James Ambrosi, Oakland city inspector, and E. E. Perkins, PCEA. Meeting was held in Oakland at which 16 representatives from inspection departments around the Bay Area, the IBEW, NECA, PG and E, and others attended. Radio time is being obtained, bumper signs and posters ordered. The home inspection questionnaire will be reprinted and distributed to the East Bay junior high schools.

**New FHA regulations**

**FHA's new regulations** became effective Oct. 1. Among them is an authorization for open-end mortgages, which will later permit home owners to have extra essential work done and add the payments on the end of the existing mortgage. The Title 1 provisions were changed and tightened to prevent abuse. Lending institutions will share 10% of the risk. Barbecue pits and swimming pools are not on the list. Up to $2,500 may be borrowed for modernization with three years to pay.

**West well represented**

**Five cases went to the Council** on Industrial Relations for the electrical contracting industry, which met Sept. 8-10 in Chicago, but this time there were two Westerners on the panel, J. D. O'Connor, contractor, Sacramento, and Thomas J. Ryan, business manager, union local 302, Richmond. Cases included Reno over wages and travel conditions, Bakersfield over wages, health and welfare, San Diego over job protection; Longview and Casper, Wyo., also had cases. Decisions have not been announced.

**Postponed**

**The job management course** being planned by the Northern California Chapter, NECA, is being enrolled and the starting date has been postponed from September until early January to make sure text material is available and to sign up all potential contractor students, E. G. Kramm, manager, announces.

**Awake to advance**

**Something is stirring** on the lighting fixture front again. Not only such companies as Lightolier and Moe Light are carrying on national advertising in the shelter magazines, but General Electric Lighting Institute recently held a home lighting fixture distributor's conference to "help the electrical trade, particularly the distributors, make the most of an unusual opportunity and to learn the best ways to merchandise light conditioning at the point of sale." . . . Meanwhile Moe Light has brought out a new selection of contemporary light fixtures called the "Decorator" line, featuring a bubble type of reflector or diffuser in several combinations. . . Lightolier has published its largest style book and catalog for use by contractors, distributors, architects, engineers and decorators as a reference manual. It is a 96-page, 9x12 volume in color. Introduced also is a new line of celing fixtures called "Decorative Calculites," new fusing champagne-tinted glasswares and lenses.

**On the road**

**"Chain Reaction."** the Westinghouse Electric Corp.'s traveling sales show for contractors, distributors, factory and office building owners and managers, starts its 22-day Western run at Salt Lake City Oct. 21 and goes to Billings Oct. 25, Butte Oct. 27, Spokane Oct. 29, Seattle Nov. 1, Tacoma Nov. 2, Portland Nov. 4, Eugene, Nov. 5, Medford Nov. 8, Eureka Nov. 10, San Jose Nov. 12, San Francisco Nov. 15, Oakland Nov. 16, Sacramento Nov. 17, Reno Nov. 19, Fresno Nov. 22, Bakersfield Nov. 23, San Bernardino Nov. 24, Los Angeles Nov. 29, Long Beach Nov. 30, San Diego Dec. 1, Phoenix Dec. 3. It stresses the business opportunities from plant and building electrical modernization and automation, runs two hours, combines color movies and slides on a panoramic screen, and is put on by a factory troupe.

**Book about it**

**"Lamps for a Brighter America"** is a new book in keeping with Light's Diamond Jubilee that gives the history of lamp bulbs and tubes. It is published by McGraw-Hill Book Co., written by Paul W. Keating.

**Name honor**

**"Edison units"** instead of lumens, thus honoring Edison, inventor of the electric lamp, was suggested to the Illuminating Engineering Society at its convention by Walter H. Simson, president of Duro-Test Corp. He pointed out that the terms watt, kelvin, volt and ampere were names of scientists.

**Better grounding**

**Standardization of the grounding types** of receptacles in plugs of different voltages is the aim of the International Association of Electrical Inspectors and Accident and Safety Commissions of several states, including California Division of Industrial Safety. At the Southwestern Section meeting at Elko, E. E. Carlton of the California department also noted failures of one type in common use where the contact is made from the grounding plug to a strap across the back of the receptacle. In use the strap gives, breaking the grounding contact. Underwriters' Laboratories took note of this defect.

**Easy to sell**

**A kitchen package** of a 5-ft. wired section of Plugmold in white finish with six grounded outlets and a flush plate adapter is made a package with which electrical contractors can open the door to home wiring modernization. With this, something tangible and visible to sell, an alert contractor can build up a lot of business throughout the house. In support of its idea, Wiremold Co. has a sales contest for contractors and distributors offering prizes, is doing national advertising, supplies display material and direct-mail literature the contractor can use.

**Finance plan**

**Latest power company** to prepare a financing plan for wiring installation and modernization will be Washington Water Power of Spokane, whose program is to be announced this month. Details will be given contractors, distributors and dealers at a series of special meetings.

**Heating season**

**Heating season** will soon be here and these manufacturers announce some new products: Thermador has a new low-wattage wall heat fan with separate switches for fan and heat and a neon pilot light. Thermostatically controlled ones contain a 25-amp thermostat . . . Electromode, with its cast-aluminum radiation fins and cast-in heating element, announces a new wall-type heating panel of 1,100 w for either 120 or 240 v. . . So contractors can get into the air conditioner field with a built-in unit, Tywel Corp. of Brooklyn has one designed to fit flush inside the room as well as the outside wall. Tywel is a division of the Lewyt Vacuum Cleaner Corp.

**Napa County, Calif.,** now has county electrical inspection. A new ordinance, effective Sept. 1, covers the unincorporated areas of the county for building, plumbing and electrical installations. Electrical code will be the National Electrical Code. Inspection office is at 1436 Polk St., Napa . . . The city of Napa is revising its local ordinance and is considering the model electrical code developed by East Bay Uniform Electrical Code Committee. — **Needed regulation**

**Fluorescent Fixtures of California** is outgrowing its present plant and will build a new one in South San Francisco, Ernie O. Anders, president, has announced. It will have 66,000 sq ft and a 107,000-sq-ft lot, providing for future expansion and parking. — **Expands**

**Sam B. Williams,** former editor of Electrical Contracting magazine, later of Electrical World, who has been assistant to the chairman of the board of Sylvania Electric Products Inc., retired Sept. 1. He was president of IES in 1944-45. — **Known here**

**Among people you may know:** Robert Maxwell, chief electrical inspector, San Jose, and chief critic of the interchangeable circuit breaker, retired on Oct. 1 after many years in the inspection department. He was president of the Southwestern Section in 1950. . . Dan M. Finch, associate professor of electrical engineering, University of California, was elected a fellow of the Illuminating Engineering Society at the IES national conference at Atlantic City in September. He is likewise the new South Pacific regional vice-president. . . Lee Hayward, formerly Northern California District manager for Anaconda Wire & Cable Co. in San Francisco, is now with the North Coast Mercantile Co., Campton Supply Division at Eureka. Frank Dickie is the new Anaconda Wire & Cable Northern California District manager. . . Paul Waterbury and John Kresich, formerly of S & M Lamp Co., have joined Steber Mfg. Co., which is establishing a plant in Los Angeles. . . William Friend returns to Los Angeles as Los Angeles district manager for Sylvania Electric Products Lighting Division and Robert Harper becomes regional manager. . . Jack Rohring, Southern California Edison Co., has been named general chairman for the Souh Pacific Coast IES regional technical conference in Los Angeles next April. . . Robert T. Carson of Honolulu was named Federal Housing Administration director for Hawaii, replacing J. Stowell Wright. Another FHA change is the removal of Andrew Frost as assistant state director in New Mexico, following suspension on charges of irregularities. . . Ed Siegert, who has been vice-president and general manager of Central Supply Co., Portland, has organized a manufacturing agency to serve the Pacific Coast on electrical, lighting, plumbing and heating lines. His address is Box 862, Portland 7, Ore. He has been Oregon representative of NAED and is second vice-president of the Oregon Electric Club. — **People in the news**

**A fool-proof,** low-cost home fire alarm has been put on the market by the Edwards Co. The heat detector device rings a bell signal. It is packaged with directions for easy installation. It fits into a 2-in. deep decorative box, covered by an aluminum plate 6x5 in. No tools are needed for assembly. Workman slips the ends of side braces into the panel sleeves. — **Home alarm**

**Ezebilt Scaffolding Co.** of Burlingame, Calif., with its gravity lock mechanism (without bolts), shows a number of applications to tricky problems of mounting scaffolds for maintenance or installation around obstacles. — **Adaptable**

**Board of Examiners for electrical contractors** in British Columbia has just been announced by the provincial government. They are D. J. Sanderson, representing the Electrical Inspectors' Assn. of B.C.; H. J. Sayer, Associated Electrical Contractors of B. C.; and a representative of the Vancouver Electrical Assn. — **Provincial board**

**Scott Beamer,** consulting electrical engineer in Oakland, was the guinea pig to test whether the Oakland police department's new radar speed trap for motorists can legally be employed. If it gets Supreme Court O.K., Beamer may get fined but there should be opportunity for more such speed traps for contractors to install throughout the state. — **Speed trap**

**In Seattle, IBEW Local 46** assesses members for a jury-duty fund to pay regular wages of any member called on the jury. This makes up to the union scale the difference between jury compensation and what the wiremen would have earned on a job. — **Paid double**

"Doc" Horom, Mary Ann Gates and D. J. McGonigle map plans that will have the . . .

# Montanans Jump Into Jubilee

"Montana is really jumpin'," the jive expression, can well be applied to sales promotions and programs initiated by Montana Power Co. and tied in to the celebration of Light's Diamond Jubilee. Everybody is in the act — selling, that is — even Montana Power. The latter is selling floor and table lamps again in order to recreate a lost market for the dealers. But dealers certainly have plenty of help in their own exclusive selling with the three programs underway, according to D. J. McGonigle, general commercial manager.

These include a return of the rural sales campaign, so successful last year. There is a "buy six—get seven" lamp bulb, socket-filling drive. The third is the pin-up and portable lamp campaign, either direct mail, purchased from the company or customers can buy them from dealers.

To further electrify its own people into action, Montana Power offers a series of J. E. Corette business development awards. Division managers and customer service managers can win a trip to the Ebasco sales conference next September. Customer service advisors and home service advisors win trips to the Northwest Electric Light & Power Assn. Business Development Section meeting at Salt Lake City next May.

### Rural Sales Campaign

This runs from Sept. 1, 1954, to May 31, 1955; applies to all rural customers, both rural farm and rural village, a total of 13,385 directly served customers. It is aimed to help these customers purchase all five of the campaign appliances, which they do not now have.

A letter to these customers offers them a coupon applicable toward the purchase of a water system, range, water heater, freezer or dryer. A company representative must visit each customer on the eligible list before Nov. 30, discuss, sell the idea and leave a coupon for each appliance not now owned of this group.

Distributor and dealer meetings are being held to organize them to take advantage of it. Free mailing address stickers are offered for mailing pieces to the selected list. Dealers are free to advertise, urging customers to cash in the coupons. They are to have free access to copies of the coupon distribution list at the company office. The coupons are serially numbered in quadruplicate, with a copy to the general office, one to the customer, a third to the division and a fourth to the town office where they are accessible to dealers.

Conditions call that dealers must be regularly established electric appliance dealers. The coupons are not transferable to any but the one listed, and appliances must be installed on the premises recorded between Sept. 1 and May 31 and be operating by June 30. It must be new merchandise, not replacement, although it can be an additional unit. The customer must endorse the coupon and then it is redeemed by the company at full face value from the dealer.

Eligibility specifications on the appliances have been set up. A range, for instance, must be a three-wire, 120/-240-v with oven, dryer a 240-v; freezer four cubic feet or larger.

Coupons are worth $10 for a water system, $25 for range and water heater, $10 for freezer and dryer.

A quota of 1,500 ranges, 1,500 water heaters, 500 freezers, 500 dryers and 300 water systems, a total of 4,300 units, has been set and broken down into division quotas. Newspaper ads and direct mail will support the campaign.

### Beauty-plus Lamps

The Beauty-plus portable lamp campaign began Sept. 1 and runs into 1955. It is conducted by Montana Power and all portable lamp dealers and is aimed to organize the industry in mass presentation of the good lighting provided by portable lamps.

Montana Power stocks and wholesales to dealers Beauty-plus lamps made by National Lighting Equipment Co. or orders by catalog from Colonial Premier Co. Lamps are sold at retail list, either cash or in five payments without carrying charge. A dealer discount of 20% is given if the company makes the delivery from stock, 25% if dealer makes his own delivery.

A sales brochure has been sent 111,-300 residential customers. In it customers are advised either to buy from Montana Power Co. or their favorite dealer. Included is a coupon, which can be taken to dealers' stores for a free 200-v lamp with the purchase of six ordinary lamps. The quota for the system is 6,000 floor and pin-up lamps.

Displays will be made in the company's offices and dealers are invited to display also. Home service support, advertising, TV commercials, etc., will be used to make the public aware of these sales opportunities. The company has likewise furnished dealers with a long list of other lamp manufacturers from whom the Beauty-plus

CLM type of lamps may be obtained.

**"Buy 6—Get 7"**

The bulb campaign runs from Sept. 1 to Nov. 30 and all lamp bulbs will be sold by dealers. They are to give free a 200-w lamp with the purchase of six others. The power company will redeem the coupons from distributors. Dealers turn them in to the distributors for credit. The distributors agreed to the plan in a meeting on July 8.

A reminder placard is furnished dealers for their lamp displays. A sticker is furnished to apply to the carton for the extra lamp.

**Open House**

An additional 75th anniversary observance will be open house at all the company offices in Billings, Bozeman, Butte, Great Falls, Helena, Lewistown and Missoula on Oct. 21, the date of the lamp anniversary. Refreshments of coffee and doughnuts or cookies will be served by the home service advisors, attendance prizes will be drawn and a 200-w lamp bulb given to each adult entering the offices during the time.

D. J. McGonigle, general sales manager, calls it "The Big 4 in '54" and it is one of the most comprehensive tie-ins in the West with the Diamond Jubilee celebration.

## TV Takeover Tie-in

As Westinghouse took over television station KPIX in San Francisco, it celebrated KPIX-Westinghouse Week starting Sept. 12 with some 125 consumer-product dealers as a sales-opportunity tie-in. Chris J. Witting, president, Westinghouse Broadcasting Co. Inc., from Washington, D. C., Walter J. Maytham, vice-president, Westinghouse Electric Corp., for the Pacific Coast, and Philip G. Lasky, KPIX manager, held press conferences at which they announced that the company's Portland radio station has also applied for a TV license and the hearing will be held soon.

Specials of the new copper-styled range and refrigerator, the new Laundromat and dryer twins and the Capri television sets are being offered by the dealers as a tie-in with the telecasts and civic events commemorating the beginning of the new ownership. Lamp dealers, likewise, have been alerted to tie-in with point-of-sale display cards. Large institutional ads with national and dealer product ads carry a salute to the station.

Asked about the value of having a television station in an area, Witting told of the experience by the company in the eastern stations it owns and with its radio stations. He said broadcasting and television are valuable as public relations assets in the large manufacturing areas where the company owns plants. It builds employee morale and gives community advertising to the plants and products of the company. Witting also said that KPIX can broadcast color from the networks now but will be equipped for color programs from San Francisco by next summer.

**Dave Fagg, Westinghouse instructor, at first of a series of two-week service training schools in Oakland for dealer men from the West, is showing freezer recharging to Alan Smedley of Layton, Utah; Reed Oviatt, Farmington, Utah; Rolf Hough, WESCO, Oakland; Francis Brokaw, Chico, Calif.; Richard Wyrsch, Mountain View, Calif. The regional courses are in charge of Walter F. Schanz, Pacific Coast regional service manager, the first was given in late July, then others began Aug. 23, Sept. 13, 27, Oct. 11, 25, Nov. 8, Dec. 6**

## Alerted to Jubilee

Like Paul Revere alerting the Minute Men, dealers in northern California are being alerted during September and October to make the most of the Northern California Electrical Bureau and Pacific Gas and Electric Co.'s "Edison Light's Diamond Jubilee" promotion Oct. 18-30 (see EWEST, September 1954, p 106). Drawing card of the promotion is a $20,000 prize drawing for which no essays or purchase are necessary, requiring merely a registration on an entry blank in a dealer's store. The idea is to build traffic in stores of dealers who are cooperating in this campaign.

A series of meetings in the San Joaquin Division started Sept. 7 at Madera and then continued on successive days, practically, at Los Banos, Selma, Dinuba, Corcoran, Fresno, Coalinga, Bakersfield, Santa Maria, San Luis Obispo and Merced during September. In the other divisions, meetings were held Sept. 2 at Chico with LeRoy Bennett, NCEB manager, as speaker; the 14th at Monterey with Bruce Wilson, Thompson & Diggs; 15th, at Gridley-Marysville, William Gribble; 16th, Red Bluff, William Gribble, Thermador Electric Mfg. Co. In October are scheduled meetings Oct. 4, Sonoma Mission Inn with Al Meyer, Leo J. Meyberg Co., as speaker; Stockton the 5th with James Tuttle, Motorola; Oct. 8, San Francisco, William Buchanan, Frigidaire; 12th, San Jose, W. A. Cyr, ELECTRICAL WEST; 13th, Oakland, Walter Baker, Westinghouse; Oct. 13 breakfast, Placerville, and luncheon, same day, at Woodland, William Baldwin, Frigidaire.

## Appliance Show

Gilson Electric Supply Co. of Oakland repeated the appliance show it held successfully last year. This distributor turns the corridors of its warehouse into a gay avenue of demonstrating booths. Factory demonstrators cook and blend and make coffee on electric housewares as a stimulant to visiting dealers to do likewise in their own stores to generate Christmas trade. The Sept. 16-17 event attracted dealers from all of northern California.

Patterson Sherwin Bornstein Halvorson Dillon Gough Lauritzen
Bell McDaniel Meilinger Engel Barlow

# Color, Built-ins Talked at San Diego

Color television to see and built-in ranges to worry about, with a dash of promotion for the "Diamond Jubilee Sell-A-Bration," spiced the compressed annual fall conference of the Bureau of Home Appliances of San Diego County Sept. 15, attended by more than 500.

Six makes of color TV receivers, spaced on the stage and rear of the room, gave the 500 attending their first San Diego showing of color telecasting as the sets picked up the spectacular Westinghouse "Best of Broadway" show, broadcast from Los Angeles. Makes were Hoffman, Motorola, RCA, Sears, Westinghouse and Zenith.

After this colorful overture, at dinner time, the compact high-speed program took off and landed precisely on schedule. It contained an installation ceremony by the first bureau president, E. W. Meise, to install the newly elected president, Lee Bornstein, Lee Distribution Co., to succeed R. D. Halvorson of La Jolla and the other officers.

Two major features were large-screen illustrated talk by George Meilinger of Westinghouse Appliance Division and that of RETMA President Glen McDaniel. A question panel, led by Bureau Manager J. Clark Chamberlain with Harry Gough, General Electric, Ronald Barlow, Rheem-Wedgewood, H. G. Dillin, executive vice-president, San Diego Gas & Electric Co., Howard Patterson, Chromatic Laboratories of Oakland, was a feature. There also was a presentation of the sales training activities, with its offering of an associate in arts degree from San Diego State College, by Chairman Ivan Lauritzen (conference program chairman also), and a spectacular prerecorded luminous panel display to publicize the Light's Diamond Jubilee promotion program called "Sell-A-Bration Days" was made by F. M. Raymond, advertising manager of the utility.

McDaniel's talk centered about the need for the industry voluntarily to solve the problems of what he called spurious radiation before the federal government forces restrictions on manufacturers of sets that would make them prohibitive in price. If given the opportunity, he said, the industry would develop the best possible circuit, not prohibitive in cost, and then seek for self-discipline by manufacturers to prevent the marketing of sets that throw out this spurious radiation and cause interference. McDaniel also spoke of the outlook for radio-TV set sales, said the manufacturers were tailoring production now to better known marketing possibilities and there is less chance of glutting the market and causing dumping and price cutting.

**"Frosty" F. M. Raymond illuminates the Sell-A-Bration of Light's Diamond Jubilee**

Meilinger presented the same talk given by McKibbin at Western Merchandise Market last month. To illustrate the tremendous potentials in the appliance business, he stressed the need for an industry-wide attack on the wiring problem.

The built-in range, either electric or gas, predominated in the panel session. Gough felt that although the built-ins are being installed by builders in tracts, dealers still would have the majority of this business as the remodeling and replacement market is developed. Barlow, who said 15-20% of the area's tract homes are getting built-in ranges, felt this would expand the remodeling market for dealers.

Gough was asked if there was any trend toward direct sales to retailers by manufacturers. He said that except for direct sales to contractor-builders distribution would still go through distributors although shipments might go straight to dealers. A distributor still needs to be relied upon for sales promotion, sales training and for development of the market. Dealers, he said, would continue to be the backbone of the appliance industry.

Barlow announced that Rheem-Wedgewood would soon have built-in gas or electric dryers. These would possibly meet requirements for financing under the FHA building loans.

Patterson not only showed the 21-in. single-gun Chromatic rectangular tube but answered numerous questions about color TV. He said the color-set situation is about to turn the corner but before the public takes to it en masse it will require larger screen size, reliable performance, rectangular tubes and practical length for a reasonably sized cabinet and lower cost. Tube size will be more or less standardized by the glass manufacturers, he said.

Dillin spoke of the growth in electrical usage in San Diego County, from 1,338 kwh per residential customer in 1945 to 2,360 in 1954. This meant a revenue gain of 160% for the company but has required a 181% increase in plant capacity.

## Dryers Get Assist

Celebration of National Electrical Week and a big electric clothes dryer campaign will be Los Angeles' way of big-time promotion for electricity this fall. Mayor Norris Poulson has proclaimed Oct. 17-24 as electrical week in celebration of the 75th anniversary of Edison's invention of the incandescent lamp. The Electric League of Los Angeles and the Department of Water & Power are joining in a general promotion campaign, the Electric Club and the Junior Chamber of Commerce will stage luncheons, an "Electric Queen" will be touring the business area in an old-fashioned electric automobile, and dealers will stage individual activities to tie in.

Major promotion will be the clothes dryer campaign beginning Oct. 1 and ending Dec. 31, in which the Department of Water & Power offers $15 toward a wiring installation of an electric dryer. In a competitive bidding arrangement Vancott Electric Co. agreed on a flat $59.95 price for installation. Advantage is also taken of Bank of America's financing of the cost of dryers, ranges and water heaters up to $100. A goal of 2,000 dryers has been set as against last year's 1,200 for the same three-month period.

Glen L. Logan, managing director, Electric League of Los Angeles, has sent all dealers a kit containing the details of the dryer campaign, copies of the bill enclosure to be sent by the Department of Water & Power, dryer installation request forms, details of the wiring reimbursement plan, the optional Bank of America financing plan, as well as a schedule of dryer ads in the metropolitan papers, a window banner, a list of displays by distributors of dryers in department offices and condensed suggestions for overcoming sales obstacles.

Janet Bonnell schools demonstrators and salesmen at Oster's San Francisco kitchen

## Oster Blends Training With a Convention

Opportunity was taken at the recent home economics convention in San Francisco for a series of training meetings for the demonstrators of Oster appliances to get instruction on the latest developments in the line.

Janet E. Bonnell, director, home economics department, John Oster Mfg. Co. of Milwaukee, came to coach the conventioneers attending the appliance exhibits on the new two-speed Osterizer blender. Then, in the well-equipped demonstration kitchen and meeting room on the second floor of the San Francisco factory branch and service station at 855 Stevenson St., just at the rear of the Western Merchandise Mart, Mrs. Bonnell conducted class for the 12 demonstrators and four field salesmen in northern California. Following the San Francisco sessions she went to Los Angeles, Seattle and Honolulu for similar instruction. She is the author of the company's instruction books and recipes.

LeRoy V. Herbert, factory representative in charge of the northern California office and service station, is also arranging for company demonstrators to conduct consumer education programs at this well-equipped electric kitchen and classroom. In addition to the Osterizers, the company makes portable mixers and knife sharpeners.

## Idaho Lights Up Sales for the Jubilee

Eight wholesalers and Idaho Power Co. are staging a light bulb selling campaign in southern Idaho from Sept. 13 to Oct. 31. It is tied in to Light's Diamond Jubilee. Distributors and Idaho Power representatives contact all lamp dealers, furnish them with a two-color banner for their windows or stores, and support the activity with newspaper ads and radio spots.

In the "Quota Busters" campaign for commercial and industrial representatives and district managers, which ran from June 7 to Aug. 7, the 1,250-kw goal was greatly exceeded by Idaho Power Co. men. They sold 5,413 kw to commercial and industrial customers, not of the large-power group. This represented commercial cooking, water heating, floodlighting, window and store lighting, accent lighting and automobile showroom lighting.

Prize of a trip to the Hotpoint advanced commercial cooking training program was won by Oscar Elliott of Payette. The prize of $75 worth of luggage was won by Perry Kail of Twin Falls, and a third prize of a portable radio by Jim Diven of Payette. Manager who won a trip to the next Northwest Electric Light & Power Assn. Business Development Section meeting in Salt Lake City was Harold Smith of Huntington. Luggage was won by Perry Ward, Parma; a portable radio by Jim Gibb, Blackfoot.

ELECTRICAL WEST Sales Guide

# News Letter

October 1954 ©

FOR THE ELECTRICAL MERCHANT OF THE WEST

Remember miniature golf courses! Because a few made money everybody and his brother started one. Soon they were on every empty lot and killed themselves off. A few still operate. They weathered the typhoon of competition. . . Right now the crazy mixed up fad is discounting. A few smart guys rode into the money under the protection of service, brand name and promotion that came before them. Now everybody is in the act. It's dog eat dog and that's no figure of speech. When enough go broke it will settle down again to a few manufacturers, distributors and dealers who will operate "legitimate" because that's the only way it can be done and survive. It has always been so.

Inevitable

Maybe color TV is wonderful but nobody yet but the press and a few friends of a distributor has seen any. It reaches the Coast after closing time so not even the few big stores that have a set seem willing to stay open to demonstrate. Somebody might be "fool enough to buy." Or is it "agin union rules"? When CBS and NBC and sponsors spend a million or so to put the color shows on the air, who knows they are worth buying a set to see unless given a sample viewing? Big Hollywood previews for a few radio columnists, who turn out critical reviews of them anyway, will hardly sell sets to you and me sight unseen.

Selling by Braille?

Any hope that the unfair practices acts in Western states can be used legally to stop price cutters was dispelled by California Assistant Attorney-General Wallace Howland in telling the National Association of Electrical Distributors zone convention in San Francisco. The law says it must be proved price cutting was done with the deliberate intent to injure you. There are dozens of other reasons that can be given as an excuse and you have no case.

Law's limits

Fall and winter business prospects are good though. Don't let the cries of the politicians who are out and want to get in make you think there is cause to worry. Employment is higher than used to be considered normal. Manufacturer and distributor inventories are low and not likely to dump on the market any surpluses. Interest in things electric is at its highest, thanks to the universal celebration and promotion along with Light's Diamond Jubilee. The opportunity is all yours----

Looks good

Philco's John Otter impressed the San Francisco NARDA meeting Oct. 5 that his company really meant business with its new franchises to dealers and distributors. To protect customers from lack of proper service and selling and to protect Philco's brand reputation, it requires any of its distributors to buy back anything they have transshipped.

Make them eat it

Never since Electrical West first published a directory issue have there been so many and so drastic changes in distributors, authorized service stations and parts suppliers. Held over until our next, the November issue, in order to make it most complete and up to date, the directory will be a useful reference for every dealer and utility in the West to assist their customers find appliance service stations. Turnover since the last directory, April 1953, is almost unbelievable.

Who and where

After buying three shares of stock in Hawaiian Electric Co., W. L. Nylen Jr., appliance dealer of Honolulu, asked the other 3,500 stockholders to vote that Hawaiian Electric Supply Co. be completely separated from Hawaiian Electric. His contention that the supply company operations reduce the return and contribute to a rate increase is denied by President L. A. Hicks, who says the supply company's energetic promotion builds load and helps keep rates low.

One-man revolt

The trend in financing of major home appliances, Edward L. Rada, assistant professor of family and consumer economics in UCLA, concludes in a study he made during this year, is toward more built-in and mortgage-financed appliances in the homes of the future. He also found what we all know, that 20,000,000 homes do not have adequate enough wiring for the appliances they need.

Built-in financing

Beyond the Jubilee, there are more promotions coming. Electrical housewares will receive a push during November and December with special ad and sales help assists by utilities and NEMA electric housewares section. . . Washington Water Power and Inland Empire Electric League has an automatic laundry campaign running, called "Mother's Helper Campaign," with quotas of 2,400 dryers and 2,100 automatic washers. A committee to stage a great all-electric show next March in Spokane's new Coliseum has been set up with WWP and IEEL. NECA and IAEI working as a team. . . Seventeenth annual electrical and home appliance show of the Bureau of Home Appliances of San Diego County will run from Nov. 26 to Dec. 1, occupying four big exhibit halls in Balboa Park. . . Kitchen Karnival will be a housewares and kitchen show at Pan-Pacific Auditorium in Los Angeles Nov. 26 to Dec. 5.

Carry on beyond

Show dates for next year already announced--Chicago Market Jan. 31 to Feb. 11. . . Los Angeles Furniture Market Jan. 16-20, also California Lamp & Picture Show at Los Angeles' New Clark Hotel. . . Patio and Barbecue Show, Alexandria Hotel, Los Angeles, Jan. 23-28. . . In San Francisco, Western Winter Market Jan. 24-28; Gift, Glass, China, Stationery & Housewares Show Feb. 3-6. . . Portland Housewares & Gift Show, Portland Public Auditorium and Plaza Hotel, Feb. 13-16. . . Seattle, the Pacific Northwest China, Gift & Housewares Show at Civic Auditorium and hotels Feb. 20-24.

Date book

Hotpoint Commercial Equipment Department staged quite a show for the visiting restauranteurs at the Western States Restaurant Convention in San Francisco Oct. 5-7. Specially featured were the Quintet Commercial Cooking Center and Mark 313 range, as well as a cast of gorgeous cowgirls and Indian Princess Fryfry.

Hot numbers

First promotional campaign on Precipitron air cleaners has been announced by Washington Water Power Co. in order to pioneer a market for this new and useful home appliance. It will feature the Westinghouse Precipitron, which cleans the air electronically. . . Raytheon also makes an electrostatic air purifier. . . Newest one to enter the field is Norge with its Norge-Aire, a window type of unit. . . Wesix-Ionix auxiliary electric heater ionizes the air but does not filter it.

Clean air promotion

Had you been told?

People in the news: Don Willis, dynamic sales manager at Arizona Public Service Co., was promoted to vice-president in charge of sales. Doug McGregor, former v-p in charge of sales and personnel, becomes v-p in charge of personnel with tax and property duties added. . . Walter E. Lind, Pacific Gas and Electric Co., San Francisco, was promoted to director of dealer sales and Daniel Alexander from the Marysville District, dealer representative, becomes the industry coordinator. . . O. O. Schreiber, one-time San Francisco man with Philco, has now become a v-p of that corporation. . . Arvin radio-TV division took John Muntain from Pacific Wholesale Co. to become district manager, working with Raymond P. Spellman, Arvin's new regional manager for the West Coast out of San Francisco. . . Stan Andrews, former regional manager at Dallas for General Controls Co., moves to the plant at Glendale as appliance controls division manager. . . W. K. Body was made assistant chief engineer in charge of refrigeration and air conditioning for Thermador, Los Angeles. . . A. P. Cain was named West Coast s-m for Crosley radio and TV with headquarters in San Francisco. He comes from Dallas. . . Charles A. Green was made regional s-m for Whirlpool Corp. in the Colorado region. . . Hadley Chapman, who was v-p and Chicago branch manager for the RCA Distributing Corp., moved to Los Angeles as v-p in charge of that branch. . . H. W. Luker is now Thor Corp. zone manager for New Mexico. . . Olympic Radio & TV has made Stanley Cohen regional s-m for the 11 Western states. He was formerly with Pacific Mercury of Los Angeles and replaces Walter Chase. . . Frank C. Flentye is now national s-m for Stanthony Corp., makers of kitchen ventilators, Los Angeles. He was formerly with Mullins Mfg. Corp. . . Theo. H. Davies & Co. Ltd., Honolulu, announced these changes: Oziar K. Malini, district manager for appliances; Howard Bolger, retail sales manager; and Les Meyers as wholesale sales of Crosley TV and radio and some traffic appliances. . . Vern Wentzel is Western regional s-m for Waring Products Corp., with headquarters in Sun Valley, Calif.

Still on the move

More distribution changes: Western Supply Co., Salt Lake City, is now distributor for Raytheon TV and radio. A. N. Etuche is president. . . Smith Morley Co. no longer handles International Harvester distribution in Salt Lake City. It is carried by the district office of I-H. . . Midland Specialty Co. of Phoenix is distributor for Arizona for Youngstown Kitchens, replacing Crouch Appliance Co. . . David R. Hull, v-p of Raytheon, helped organize a distributorship called Associates of Hawaii with Robert R. Hill as president, John R. Sanders v-p, former Raytheon man. . . Fred Barber has organized the Fred Barber Supply Co. with office and showroom at Haslett Warehouse, Oakland, as exclusive distributor for Stewart-Warner in Alameda and Contra Costa Counties. . . O. B. Wilt Co. now handles the Fasco line of fans, formerly represented by Cliff Russell. . . California Electric Supply will distribute Presteline built-in ranges in the San Francisco area. O. B. Wilt is distributor for the West Coast. . . Du Mont is now handled by a new distributing firm of Stewart and Stevens Inc. in Los Angeles for southern California. Both had been distributors for Packard-Bell. . . Graybar Electric Co., Seattle, now has Hoffman TV for western Washington, replacing the former factory distributorship. . . CBS-Columbia named Quality TV Corp., Los Angeles, replacing Ray Thomas Co. . . Two new distributors for Westinghouse radio were named: Hollywood Wholesale Electric Co. and Horn & Cox in Los Angeles. . . General Appliance Corp., Salt Lake City, was named distributor for Manitowoc freezers by Kenneth J. Dahm Co. Osborne & Dermody, distributor of Philco, Easy, Apex, Westinghouse, Thermador and Nesco in Reno, moved to 2300 Valley Road. . . Jensen-Byrd Co., Spokane, became distributor for radio and TV for Sylvania Electric Products. . . J. J. Moffatt, now gsm for Necchi and Elna Sewing Machines, has appointed Territorial Sales Co. as distributor in the Hawaiian Islands.

Jud Sayre seems to be moving his former Bendix team over to Norge and there is plenty of news from Norge these days. First it bought Leeson Steel Products from Thor for the manufacture of built-in ranges, as Thor decided to stick to its washers. . . Norge recently announced a budget-priced clothes dryer for $149.95 with full performance and full size. . . It upped the list price of its topmodel refrigerator from $389.95 to $429.95, making a longer dealer markup.

Makes news

Some new housewares items to push for the Christmas trade: Manning-Bowman has a new heat massager for tired feet. It can also massage back and shoulders by using a wall bracket. . . And for cold feet, Interstate Rubber Products Corp., 908 Avilla St., Los Angeles, has an Electromat, a 100-w rubber mat wired for heat. . . Seth Thomas Clocks meets both the modern trend of home decoration with its Rondo, Minx silhouette models and has a dignified tooled leather model called Poise for the elegant bedroom. . . And Sessions Clock Co. puts a clock in a fishbowl with underwater lighting for $22.95. . . Schick Shavers has a world traveler kit with a resistance coil and adapters for fitting into foreign sockets and outlets. . . Nesco, with a modern-styled tea kettle called Tearyte and a Fryryte and Cookryte, adds a two-speed fan and heater to its streamlined line, called Airetyte. . . Westinghouse offers a pint-sized portable vacuum cleaner, a portable electric mixer and a 9-cup coffeemaker to its Roaster-Oven for the Christmas trade. . . Manning Bowman Division of McGraw Electric has a new 9-cup automatic percolator and the Toastmaster Division a 3-slice toaster for the big family.

Christmas gift items

Universal (Landers, Frary & Clark) sent its v-p and s-m of the appliance division, Stanley Fisher, West to aid district sales managers, such as Karl Lepple, show distributors new model Cook-a-matic, Mixa-blend, table stoves, toasters, heating pads and a clever little Steam' n'Dry travel iron, as well as a new chrome mixer, smaller Coffeematics.

Added models

Three old-timers passed on last month: H. R. Basford, one of the pioneer appliance distributors in San Francisco, died Aug. 31. . . In Seattle Wilfred W. Wheat, retired since 1943 manufacturers' representative of appliance lines, died recently. . . Edwin R. Buck, who toured Montana with promotional shows for Montana Power Co., died Sept. 17.

Answer last call

Yreka, Calif., is to have a master antenna subscription system with signals relayed from Klamath Falls, Ore., picked up from up to five stations. Charge will be $125 installation and $4 a month.

Piped in

Two more built-in ranges have come out recently. Preway Inc. of Wisconsin Rapids showed a built-in range at a recent fair and is said to be seeking agencies. It is built for mass market selling, the maker says. . . From Louisville, Ky., comes announcement that Stiglitz Corp. has a new series of built-in ovens and cooking tops called Infra-Aire in a wide color variety and with the stack-on principle.

More built-ins

Glass-lined electric water heaters in five sizes, from 100 to 350 gal, for commercial installations are announced by the A. O. Smith Corp. Permaglas Division, which also has new 30- and 40-gal tabletop models with a simple top installation feature and small, individual 6- to 15-gal units for trailers, motels, summer camps, etc.

Big tanks

Federal Excise tax will be included in the list price for lamp bulbs by General Electric, which will adjust both upward and downward to do so. This will save the dealers collecting and accounting separately for these taxes.

Absorbed

Lee Dulfer Price Art Scaife Wagele Hanson

# NARDA Series Grapples With Realities

Whatever the dealers in appliances learned from it, one fact of life certainly should have been evident at the first "Profit Clinic" of the San Francisco Chapter of the National Appliance & Radio-TV Dealers Assn. held at Western Merchandise Mart, San Francisco, Sept. 17.

That fact : this is free enterprise and success goes to the enterprising.

As the dealers' own eloquent spokesman, Harry B. Price Jr., dealer in Norfolk, Va., and vice-president of NARDA, told them frankly there is no panacea for the ills of the business. There have always been problems—always will be. The way to beat discounting, backdoor selling and any and all the other evils of the business is to sell better, service better, manage better, build better public and community relations and just plain outdo any and all competition.

The top echelon manufacturer and banker speakers, for this meeting really drew them, said about the same thing but in less straight-from-the-shoulder language. After all Price, a successful example of his own teachings, could talk from his own experience. He pulled no punches.

As a result a compact, 10 a.m. to 5 p.m., meeting was one of the meatiest, most frank and honest and hence truly constructive that the San Francisco Bay Area has ever had. It drew some 200, at least half of whom were owners of appliance stores or managers of big store appliance departments. Bakersfield alone flew up a chartered plane load of dealers. Others came from Sacramento, San Jose and the entire Bay region. One came from the Hawaiian Island of Maui.

The slate of topnotch speakers started with O. R. Doerr, vice-president in charge of sales, Pacific Gas and Electric Co., included both the Scaife brothers, whom Meeting Chairman William Lee, Sherman Clay & Co., mixed up in his introductions, Howard Scaife, Hotpoint's general sales manager from Chicago, and older brother Art Scaife, manager of sales planning for G-E Small Appliance Division, Bridgeport. Jesse Cartwright, Norge's home service director, Russ Hanson, Motorola's service department, and A. F. Wagele, assistant vice-president, installment credit and loan department, Bank of America. Clarence E. Dulfer, president of the San Francisco Bay District Chapter, presided. Carl O. Hagstrom, General Appliance Co., NARDA district vice-president, had arranged for the top-rank program.

**O. R. Doerr** contrasted the phenominal way people solved the difficult technical and manufacturing problems, which has given the high standard of living to the country and promises such tremendous future expansion, with the slowness to solve the human relations problems such as distribution, trade practices, etc. "We all have some problems that we had better solve," he said, and he declared that meetings of this type were a method to discuss and solve them. "As leaders in the field of human relations, it is your job and mine to improve the techniques in selling and distribution," he declared.

PG and E, he said, is not in the merchandising business. Its policy is to supply adequate supplies of energy, both gas and electricity. For each dollar the utility spends for generation and distribution facilities the dealers, distributors and manufacturers must sell $1.60 in supplies and installation. He contrasted how little a per cent of the family dollar goes for electricity as compared to liquor, automobiles, etc.

**The U. S. Steel program** of promotion of white goods for Christmas, called "Operation Snowflake" in conjunction with the Curtis Publishing Co., was explained by Claude Beatty, Pacific Coast manager, and David W. Coxwell, San Francisco manager of the *Saturday Evening Post*. Complete details of the dealer tie-in, display material, local and national advertising parts of the program were illustrated.

**Howard Scaife of Hotpoint** urged dealers to concentrate more on the low-saturation appliances such as dishwashers, disposals, dryers and to develop their profit opportunities. Experience has shown, he said, that there is no "lowest price in town" because there is always someone who will cut it lower. The public is wise and nobody can blame them for shopping around. He urged, therefore, to "quit slugging it out against the brick wall of high saturation and get after the low-saturation appliances." The refrigeration business, he said, has become chiefly a replacement one with a trade-in, automatic washers require trade-ins on 26% of the sales, but with new appliances there is less saturation, no trade-in and no price cutting.

**"Leave it to the girls,"** Mrs. Jesse Cartwright of Norge Institute said, clarifying that she did not mean wo-

men should become competing salesmen to men for appliances but rather that they should supplement the salesmen and aid them in putting over the sales. In a humorous talk, she explained that what women want to know about an appliance is what it looks like, how easy it is to use and what it will do for them, and nobody can tell that better to them than another woman.

In hiring a woman, she said, "don't hire one to take out to dinner or one to supplant, but rather to complement the salesman, one who will take a motherly interest in the store and keep it attractive; one who can go out and settle complaints by showing the customer how to use and benefit from the appliance."

**Arthur Scaife of G-E** reminded that laws alone won't stop price cutting any more than they stop murder or other crimes. The appliance business faces the same problem that faced the grocery business when the supermarkets came in, he said, but independents still make more money than the chains. He told what G-E is doing to fight for fair trade but said that the company had 44 cases in Los Angeles alone. "What is the answer to this problem? I don't know. But I do know that an honest manufacturer, an honest distributor and an honest dealer working together on it are going to find a way to handle this situation."

He said that it was time for the retailer to take a good look at fair-traded traffic appliance business and say to himself "I'm going to be here, I'm going to have integrity in my business, I'm going to give good service and I am going to promote it."

**Russ Hanson of Motorola** proved of great practical help to the dealers present who quizzed him for a long time after his talk on details of service operation, charging for TV service and other realistic problems of this part of the business. He started by warning that the consumer should be educated even if some of the education has to be negative: and that a policy of unlimited service at no cost can be a tremendously costly thing to a dealer.

A great many of the nuisance calls, he said, can be eliminated by good installation and demonstration of the use of the set. Color will add a lot of technical complications that the business has not yet faced. That TV service requires as much management direction as financing, he emphasized, and said that simple, yet necessary, statements from the service manager of weekly and monthly activity, profit and loss, and a balance sheet should be required.

In a reasonable labor market, Motorola's survey has shown that a home call costs at least $5.11, where a service man makes eight calls per day. Each man should bring in at least $40 to $50 a day in order to pay the overhead on his operation.

**A. F. Wagele,** Bank of America installment man, impressed the need for close understanding between the dealer, distributor and the banker. The rate of appliance failures 50% above the same period for 1953, three times as large as 1952, while not yet dangerous, is in the wrong direction. It requires more cooperation.

Financial management of a business is extremely important, he said. The retailer should learn to analyze financial statements, set budgets for the month and year, keep checking his records and compare his own financial position with the averages given in the NARDA annual survey. His final admonition was that credit being a matter of confidence the dealer should train his salespeople to know it, develop good credit relations, and he himself should "snuggle up to his banker" so that each of them could help the other more.

**Harry B. Price,** however, put the clincher on the meeting. His subject, "Let's Face and Solve Our Problems," was split just that way. First, the facing of dealer problems today, then personal advice on how to solve them from his own successful experience.

In analyzing the discount situation, Price traced back to utility direct merchandising, department store and furniture house entry to appliance business, chain store competition, the inventory glut of 1948. If the present discount selling was an honest economic change in distribution, although hard to take, he said, it might in the long run benefit the industry. However, he felt that the backdoor selling during the inventory glut was the beginning of a moral deterioration.

Because it implies that it is dishonest to make a fair profit and it promotes socialistic buying groups, supported by the taxes that everyone pays, he felt it was a moral breakdown. "Businessmen in this country have given integrity and service that has lifted the businessman to a level nowhere to be found in Europe. The discounter tears it all down and destroys public confidence in business."

While manufacturers do not approve of it, they are not doing anything about it. And distributors are creating a situation, he said, which may lead to cooperative buying organizations among dealers to compete with them.

If the entire business goes to this level, he said manufacturers will find that national advertising alone will not create the wants to expand purchasing of their products. Their markets will dry up. "Do you mean to tell me that when a discounter puts a washer on the back porch the customer gets the benefit of all the research and all the value that is built into the manufacturer's product?"

As to the dealers' own shortcomings, Price minced no words. He asked first what plan they had. Each dealer should ask himself "Why should the public buy from me instead of from a discount house?" Then he should analyze whether he gives service, makes deliveries, makes a follow-up and demonstration on appliances, provides an adequate selection; does his personnel know how to service it properly. He also asked if the dealer was putting

**These Bakersfield dealers chartered an airplane and flew to San Francisco to attend the NARDA profit clinic. Bakersfield was one of the first Western cities to start a NARDA group and Phil Urner (seated, left) served as NARDA director and as vice-president**

Norge's Jesse Cartright speaks up for the girls at the luncheon

G-E's Art and Hotpoint's Howard Scaife on the same program

anything into his community, was he a churchgoer. "You must give your customer a reason for buying from you and paying you the list price."

As to his relations with the manufacturer and distributor, he said, "Are you associated with the right people to do business with through the year? If you can't get along with a supplier, go find one that you can get along with and work with him." He also urged closer cooperation with the bank; that dealers help them in collection of accounts and thus make their own accounts with the bank worth while. He stressed the value of keeping records so as to know what the business was doing from day to day and urged they learn how to stop losing money in service by good management of the service department. The trade-in, he said, was an ace in the hole for an individual dealer if he learned to get revenue from reconditioning and reselling of traded-in appliances.

"Your capacity to move goods better and faster than any other method is the difference between you and survival in this business," was his concluding warning.

Portland, Seattle and Billings meetings of similar size and dealer representation were also addressed by Harry Price and Jesse Cartwright. Carl Hagstrom, San Francisco dealer, spoke at both Portland and Seattle, Cec Musberger, the Appliance Mart, Billings, at Portland, Seattle and Billings. Russ Hanson of Motorola also talked to the Portland meeting.

#### Portland Meeting

The Portland meeting started with a dinner at the Columbia Athletic Club, Chairman White presiding. Tom Carmichael of Seattle spoke on the value of setting up an autonomous unit of NARDA in the Portland area. Louis S. Bookwalter, technical director of station KOIN-TV, gave a discouraging picture of the technical difficulties of color television. Philip S. McAlister, professor of business administration at Lewis & Clark College, gave a talk on salesmanship.

Musberger maintained that the salesman is the industry's best friend and that selling is only 10% product, 90% people. He urged giving the salesman lots of attention, training, frequent sales meetings, competitive incentives and enthusiasm. Even in a store with one salesman, he said that salesman deserve to have at least five minutes a day with the boss to keep him stimulated and give him confidence.

Carl Hagstrom, General Appliance Co., San Francisco, discussed frankly the situation as regards fair trading and bootlegging. He ran the gamut of various buying and discount setups among federal, state and civil service employees, unions, large industries, banks, utilities, post exchanges. He said the answer does not lie in legislation but in selecting the lines that will help the dealer to do a legitimate profit business.

#### Seattle Too

The Seattle meeting, presided over by Lib Tufarolo of Lib's Belvue Electric Co., president of Northwest Appliance & Television Assn., likewise started with a breakfast. Keith Davis, past president, first spoke on "Why NARDA." Musberger and Hagstrom expressed their thoughts during frank talks and were followed by Saul Herman, credit manager of Weisfield's Inc., who discussed credit experience from a background of credit jewelry business. He stressed the cautions needed not to oversell or to let customers overbuy.

Herman Sacks, director of advertising and sales promotion, Bendix Aviation Corp., gave a selling talk on "The 10 Commandments of Selling," which he listed as: "be prepared; be enthusiastic; sell the value; ask for the order; use good tools; remember your advertising; remember your trade-in; use the user; sell credit terms; have a plan."

Something new will soon be added to the Northwest situation, according to Charles M. Sturkey, vice-president and general manager of the Seattle Gas Co., who predicted what would happen when natural gas reaches the Northwest.

Attendance at Seattle was about 200, a delegation having come also from Vancouver, B. C. At Portland about 100 attended from all parts of the state and southwestern Washington. Reports have not been received from Billings but a sizable turnout of Montana dealers was expected there.

## Have Investment in It

Dealers will share the expense of prizes in a Diamond Range Jubilee campaign promoted by El Paso Electric Co. from Sept. 15 to Nov. 27. It will cost the dealer $25 or more to help buy two ranges to be given as contest major prizes. All those participating are to put in displays, do some local advertising of their own. Customers must get entry blanks from the dealers' stores. If a purchase is made and the prize is won, the dealer will refund the money and give a bonus of $50 in merchandise that the customer selects.

One of the prizes will be given on the basis of the best essay, the other will be drawn from all entries. For the $50 bonus the company will pay the dealer his whole cost. The company also gives away a 150-w lamp through the dealer when a person comes in for an entry blank and a plastic apron when the blank is brought in filled out.

A premium for buying immediately is also offered by the company. It is a four-piece West Bend utensil set, a $16.40 value. The company's $20 regular trade-in on old electric ranges applies, an additional $10 is given for trading in of old nonelectric ranges. These must be delivered to the power company. The company also makes wiring allowances. And it offers contest prizes to dealer salesmen.

ELECTRICAL WEST

## Hail, Thomas A. Edison!

As all America and much of the civilized world pause this month to celebrate the Diamond Jubilee of Thomas Edison's invention of the incandescent lamp, our industry can well pay tribute to the man and to his contribution. The spark that he lighted—and spark it is compared to today's modern electric lamps—started a chain reaction that brought into being one of the world's great industries.

With Edison an immortal energy was born—the genius that was of the man himself. It is one of the greatest single gifts mankind ever received. And it will live and grow as long as mankind lives and grows. Edison typified the energy he created and harnessed. It had its origin deep within the spirit of the man. He himself was a tireless worker; at the same time he was a tremendous source of inspiration to his colleagues in research and in industry.

Edison would stand out today as a nonconformist. He inherited a stubborn refusal to accept theories as facts until he had proved or disproved them through arduous experiment and test. The contributions of this great disbeliever to human comfort, pleasure and enjoyment are almost legendary. Through him the human voice became immortal; pictures took life and moved; space became the carrier of music and entertainment; and greater than all of these, darkness dissolved into light at the merest touch of a finger. The pages of history reveal no other man who so revolutionized the life of the world within the span of his allotted years.

Our industry, and especially the young people in it, can well heed some lessons from Edison's life. With him invention was organized work as his thousands of experiments to find a filament for his first lamp attest. He recognized a human need and then set his brain to the task of meeting it. By experiment and test, he translated the dreams of the pure scientist into practical everyday working tools available to all men.

The electrical industry can testify to his thoroughness. Not only did he invent the lamp whose discovery is celebrated this month, but he perfected a system of electric generation, distribution and measurement to make its application practical and possible. In giving humanity the comforts, conveniences, efficiency and universal usefulness of electric service, he won for himself worldwide recognition as a distinguished and true public servant.

If Edison were alive today on the Diamond Jubilee of his lamp's invention, he would be proud of the people who have made such further striking contributions to the efficient and economical application of his invention. To them, he might well repeat his last great message:

"Be courageous. Be as brave as your fathers before you. Have faith. Go forward."

## A Challenge Is Presented

What are the electrical industry's requirements for electrical engineers? Can Western universities turn out a sufficient number of engineering graduates to meet present and future needs? There is a pertinent survey in this issue that answers these and many other questions relating to engineering employment especially in utility organizations.

The findings of the study present a serious challenge, both to power producing and distributing organizations and to the colleges and universities. They focus attention on some facts that up to now have been mere speculations. One is the decreasing interest among electrical engineering students in the so-called "power option." Another is that demand for new engineers exceeds the supply now and the shortage might get worse. Finally it shows that utilities are woefully behind times in recruiting new engineering personnel and in telling a story that is attractive to graduates.

One paragraph is especially pertinent:

"Young EEs want opportunity; utilities feel they offer opportunity. Young EEs are more interested in pay than utilities are in emphasizing it. Utilities stress security and fringe benefits but this is not a major factor

# EDITORIAL VIEWS

with young EEs. Young EEs are eager for opportunity to learn more, both on the job and by taking advanced courses; utilities do not seem to be taking advantage of this in their recruiting."

On the basis of the facts that the survey reveals, there is a great opportunity for engineers individually and for utilities to do something constructive in the whole area of engineering education.

## Atomic Power Can Step Out

GOVERNMENT monopoly over atomic energy was removed with the passage of the Atomic Energy Act of 1954. In place of the legal block that precluded incentive for private investment there is now a go-ahead signal for the creation of a private atomic power industry. The foresighted companies that have invested many millions on engineering development can now step up their activities to insure immediate peacetime uses of atomic energy.

The Atomic Energy Commission proposal that electric utilities combine with AEC to build reactor powered plants on a cooperative basis so as to bring about technological advances as quickly as possible will speed up development. Conceivably the Far West will be one of the first places where this is undertaken. Northwest power companies and the General Electric Company are reported ready to embark upon construction of a dual-purpose plant at Hanford.

Capital and initiative—the two major ingredients in industrial growth—can now move forward in developing reasonably priced power from nuclear fuel.

## Wasted on the Desert Air

JUST how dealers ever expect to sell color television sets, no matter the price, when none of them who have sets on the floor as samples will stay open a few hours during the only time color is being broadcast is hard to understand. The only showings of color so far have been to the press, to dealers and distributors and to a few select social gatherings staged by a distributor. The buying public hasn't been invited to dealers' showrooms to see this new marvel. What price color broadcasting—and it is a considerable price—if nobody sees it?

*IT is not properly a federal responsibility to try to supply all the power needs of our people. The federal government should no more attempt to do so than it should assume the responsibility for supplying all their drinking water, their food, their housing and their transportation. To attempt such a centralization of authority and responsibility always starts a deadly cycle. Parenthetically, may I remark that a region which lets itself become completely dependent upon national funds provided by Congress—which Congress represents not that region alone but the whole nation—frequently finds that the funds fail to keep pace with local needs. But the important thing is that as federal power expands in a region, local enterprise becomes increasingly intimidated and discouraged, even though the needs for energy continue to grow. Thus still more federal intervention becomes necessary. Such a conversion of local regions into federal satellites poses a deadly threat to our liberties. The administration in Washington—and the present leadership in Congress—are unalterably opposed to such malignant growth of bureaucracy. In our devotion to conservation, let us not forget that there are spiritual, as well as physical, values to protect. Above all else, we must preserve the freedom and spirit of independence of our people in our states and counties and in our cities and towns. Determination to have this freedom gave us this nation. It brought your ancestors to this western country. That determination is the surest protector of our liberties and the principal ingredient in our national prosperity.*
—President Dwight Eisenhower.

Koch Breslin

Kenyon Kimball

Black Bolin

# Better "Farming" Needed, RMEL Told

Better "farming" in the sense that the industry can do a better job than it is now doing was the essense of what speakers had to say at the 51st annual convention of the Rocky Mountain Electrical League held at Estes Park, Colo., Sept. 12-15. This applied all the way from utility expense control to better selling, public relations, employee relations, youth education, market research and adequate wiring.

Outstanding on an excellent program with top-talent speakers was an address by John T. Kimball, executive vice-president of Arizona Public Service Co., on "Better Farming Needed." Kimball brought in this title by telling about the book salesman who was trying to sell the farmer a book on better farming. The farmer said, "Son, I don't need any books on farming, I ain't even farming now half as well as I know how." That's just the position the utilities are in, said Kimball, they aren't running the business half as well as they know how. He referred particularly to the field of expense control. Every phase of operation was analyzed by Kimball to point up possibilities. He mentioned mechanization in construction, electronic machine accounting and billing, and transportation as fields for effecting substantial savings.

**William V. O'Brien,** vice-president and general manager, apparatus sales division, General Electric Co., after predicting loads, generating capacity and kilowatt-hour consumption in 1964, all of which will double or more, dwelt on the tremendous job that lies ahead.

By 1964 there will be 54,000,000 homes averaging more than 5,000 kwh per year, he said, compared to 42,500,000 residential users averaging 2,500 kwh annually in 1954.

He said there were five essentials to attain the goals the industry has set: (1) strengthened and creative sales effort; (2) greater integration and cooperation in all segments of the industry, particularly on the problem of adequate wiring; (3) far-sighted research and long-range planning; (4) social and moral responsibility to meet public needs; and (5) courage and faith in ourselves. O'Brien's entire address brimmed with enthusiasm and optimism.

**James T. Coatsworth,** commercial director, EEI, echoed the same enthusiasm over the industry's outlook. He made these important points: the Diamond Jubilee celebration augers of great success; removal of shackles so that private industry can function ahead of government has vastly improved conditions under which we are operating; a healthy utility industry is essential to manufacturers and distributors in the sale of appliances; aggressive action is necessary to keep our load building high; the wiring problem needs larger expenditure of funds; air conditioning is bringing serious wiring problems; inadequate wiring is throttling our load-building efforts; a 100-amp service and a minimum of eight circuits, recommended by the National Home Builders, is encouraging; we must look more to increasing load among existing customers; we have ample activities and ample programs to succeed in every field; average residential consumption will be 4,700-5,000 kwh in 1964.

**M. M. Koch,** president of RMEL and vice-president of Public Service Co. of Colorado, commented that he hoped this more favorable atmosphere doesn't make us complacent because we have a big job ahead.

**Roger Bolin,** general advertising manager, Westinghouse Electric Corp., said that by 1963 there will be 20,000,000 more people — 5,000,000 families will move each year—giving great opportunities for the sale of appliances. He predicts that the electrical industry will grow twice as fast in the future as industry in general. These points were made: competition for the consumer dollar will be keener; we face the most competitive decade we have ever known; it looks like the most spectacular growth will be in air conditioning; the electrical industry has restored the home to the place where it was before the advent of the automobile; in two years color TV will jump, using 50% more kwh for the average viewing time of five hours; the industry expects to sell 428,000,000 home appliances in the next five years.

Two factors will be important in this sale: (1) adequate wiring and (2) adequate selling. Selling has two parts: (1) selling the product and (2) selling its full use. Bolin feels that the utilities can and should step in and help sell uses of appliances. Customers need education and now is the time for power companies to give a new look to a program to sell use and care of appliances and their full utilization. TV would be an excellent medium in such a program.

**Fischer Black,** editor of *Electrical World*, said adequacy of wiring in the home is not keeping pace with the availability of appliances and that the industry needs a unified and expanded AW program. Half of the services on many utility systems are two-wire and 90% of homes in the country are inadequately wired to use all domestic services. He deplored the fact that the AW program has a budget of only one cent per inadequately wired home. These same things can be repeated 10

Stevenson Coatsworth

Johnston Haines

Baumer Chapman

or 20 or more years from now, any time in the future, unless the electrical industry copes more successfully with the problem of inadequate wiring than it is doing now or has done in the past, Black said.

**E. L. Robinson,** general sales manager, Gulf States Utilities, in discussing the impact of air conditioning load on his system, said that 12,000 units will be added this year, bringing the total served to 40,000 by the end of this year. Summer peak is now 130,000 kw more than winter peak. He hopes for rapid development of the heat pump to create a winter heating load to offset the summer cooling load. There is a huge market for heat pumps, he said, if manufacturers will get them so they will do a better heating job. The heat pump is emerging as the "heavy" of home appliances, said Robinson.

**Frank W. Mansfield,** director of sales research, Sylvania Inc., said that market research is a tool that can be effectively used improving public relations, load building and in finding out what the industry can do to render a better public service. He admonished those engaged in market research to develop sound techniques, assemble facts, interpret them and watch for pitfalls that will alter conclusions.

**W. H. Robinson Jr.,** advertising manager, General Electric Co., Cleveland, told of the elaborate plans for Light's Diamond Jubilee and urged the industry to capitalize on the public interest in this event to do a better lighting selling job. He stressed the great opportunities in the field of home lighting, pointing out that we have attained only one-third of potentialities. The five-room home can use 9,000 w of lighting and 21 fixtures instead of the present nine, he said. The average 1,000-sq-ft home of the future will have luminous ceilings and walls of color to meet our seeing mood, with electronic devices to turn them on and off, predicted Robinson. He presented M. M. Koch, president of RMEL, with a replica of Edison's first electric lamp as a memento of the occasion.

**R. G. Kenyon,** vice-president, Southern California Edison Co., said that the trend toward accepting socialism in this country is becoming stronger and stronger every day. He feels that much of this trend stems from our educational system and that we as fathers and citizens have an obligation to interest ourselves in the intricacies of the education procedure. "Our boys and girls are being turned over to the business world highly in favor of security and correspondingly dubious about opportunity; they like governmental paternalism, in return for which they accept rules and regulation," said Kenyon. "We are getting deeper and deeper into this concept day by day. I feel that we should reach these people and re-establish the essential value of opportunity vs security. There is no better place to start than in the schools to be followed up vigorously in the fundamental training which we in industry are going to have to give our younger generation as they join our various organizations."

**Edward F. Baumer,** director of public relations, Western home office, Prudential Insurance Co. of America, said the eyes of the world are on the West—the West is now the No. 2 market. The West has shown leadership in suburban development. Industry and population will continue to come West—there is plenty of business coming our way—are you going to be ready? he asked. Baumer feels that training and selling are the answers and said, "You can buy a man's time but you can't buy his enthusiasm—you have to earn it."

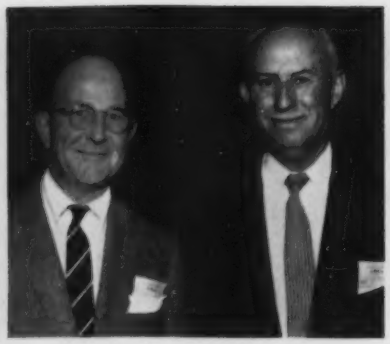
**Herbert A. Leggett,** vice-president, Valley National Bank, Phoenix, said "the time has come to contemplate some of the economic facts of life; we haven't had any recession, so how can you say it is over? Take all forecasts and deposit them in a receptacle, they are all misleading." He cited the forecasts of 1929-1932 to show the fallacy of predictions; said that two million out of four million businesses have never operated in a buyers' market, but they will learn; forecasting is a species of day dreams whistling in the dark.

**Allen A. Smith,** Laing, Gray & Smith, Portland, attorneys for Pacific Power & Light Co., traced the history of the preference clause, pointing out its injustice. We will have to continue our defensive fight and take steps to eliminate inequities of the preference clause, he said.

**W. D. Johnston,** division manager and vice-president, Mountain States Division, Pacific Power & Light Co., Casper, followed, reciting his company's experience in the purchase of USBR power over a period of years. He said they had helped market surplus bureau power over a long period of years, making feasible the bureau power developments in Wyoming, only to be notified by the bureau now that two years hence no additional power will be available to the private company. Johnston could have summed it up thus: After refraining from developing any of its own power supply for years at the request of the bureau; after living up to the letter of successive contracts; and after passing on to its customers the savings made possible by purchase of federal power, at the same time paying taxes, the bureau now says thanks for the buggy ride—from now on we are going to exercise provisions of the preference clause and you are on your own for additional power supply. From this experience he feels that the preference clause is unjust, indefensible and intended to socialize the industry.

**Robert Stevenson,** executive vice-president, Allis-Chalmers Mfg. Co., feels that it is our prolific use of power as compared with other nations of the world that is responsible for America's high national income and high standard of living. Power is the answer—power makes the difference, he said. Every American worker now has available to him 104 hp, which at 1/10 hp per man is equivalent to the physical labor of more than 62 billion

O'Brien Smith



McKee Robinson

Terry Leggett

workers. That is what makes America tick, he said. In discussing electric power production, Stevenson said that metallurgy is the bottleneck on thermal efficiency in the direction we have been going, but that 5% of the sales dollar is being spent on research by electrical manufacturers and through research these bottlenecks will be broken.

**Robert B. McKee,** vice-president, Aluminum Co. of America, looks for expanded aluminum conductors of the ACSR type to have a large future market for extra-high-voltage transmission lines. He expects great expansion in many other fields, notably in the use of the sector bus system developed for the new Alcoa building in Pittsburgh.

**Ralph Carney,** vice-president in charge of sales (retired), Coleman Co., Wichita, Kan., was left to wrap up the convention, which he did in dramatic fashion. He said we have been worried over the shortage of engineers and other manpower shortages but that the real shortage is 600,000 salesmen to sell the products of American factories. He said that half the school graduates are going to be forced into selling of some kind and decried the fact that selling isn't on the list of subjects taught in our universities. It rests with us who sell to see to it that our tremendous production reaches the consumer, he said. A 10% slowing down can trigger a depression. Carney said that 85% of retail salespeople are new since 1939 and do not know what it is to have to sell. We are suffering from a disease in this country—something for nothing—security without striving for it—the thing that destroyed France and can destroy us, he said. Salesmen are the peacetime soldiers of America that can even save our way of life, Carney declared. "Old heads must take on the tremendous sales training job that confronts us."

**Business Meeting.** At the annual business meeting W. L. Breslin, general manager, Public Service Co.,

Robinson Koch

Laramie, Wyo., was elected as president of RMEL to succeed M. M. Koch of Colorado Public Service Co. Others elected were D. B. Hyer, president, Southern Colorado Power Co., vice-president for Colorado; K. E. Darling, general manager, Southern Wyoming Utilities Co., Rock Springs, vice-president for Wyoming; L. M. Stauffer, General Electric Co., Denver, vice-president representing manufacturers; H. A. Mitchell, Public Service Co. of Colorado, treasurer; and E. E. Armstrong, Colorado Central Power Co., assistant treasurer. The spring conference of RMEL will be held in Denver April 24-27, 1955, and next year's annual convention will be held at the Rockefeller Hotel at Jackson Hole, Wyo., Sept. 11-14.

## IEA

**Salt Lake Retail Chapter** of the Intermountain Electrical Assn. had new life pumped into it at a recent meeting. The reorganization includes employment of a secretary, Robert O. Trottier, and an increase in dues. The dues increase will be used by the chapter for promotion and advertising, a service fee being paid to the Intermountain Electrical Assn. for office space and clerical assistance. Trottier also serves half-time as field secretary of IEA.

The new field secretary, assisting James Schricker, managing director, is a graduate of LDS Business College and has been associated with the Utah Blue Shield Plan.

Lewis A. Dahl is president of the retail chapter in Salt Lake City. Louis Bowring, president, and Del Foulger, secretary, of the Ogden Retail Chapter, assisted the Salt Lake group in reorganization based upon their own successful experience.

Monthly meetings, either breakfast, lunch or dinner, paid for by the chapter, will be held and the board of directors will meet independently once a month. It will consist only of retailers. New dues schedule will be $50 yearly, paid in advance, $26 semiannually or $13.50 per quarter.

Other activities of IEA included a joint meeting with the Utah Chapter of the Electrical Inspectors at Richfield, at which a proposed state law for licensing of electrical contractors and inspection of electrical work was read and prepared for submission to the legislature. Another activity is a sales and public relations training program in cooperation with the Adult Education Department of the Salt Lake schools. It began Sept. 14, Tuesday mornings for six weeks.

## Electric Clubs

**Electric Club of Oregon** had Al Krieg and Bud Seely as speakers discussing and demonstrating the importance of good street lighting at the Sept. 9 opening meeting of the fall, with J. V. Mulcahy chairman-of-the-day and Jim Kirwan, president, presiding.

**Electric Club of Washington** is acting as coordinator on another revision of the Seattle city electrical code. John M. Hinds, associate engineer, Electrical Building Department, told the club that the recent revisions of the code were returned by the city council with a request for a complete new code rather than revisions to the old.

# The new Westinghouse *Lifetime* meter

**The one meter for all present and foreseeable future single-phase loads that can be metered without an instrument transformer.**

**Read on the next three pages why we can offer this new meter with a 30-year Lifetime guarantee. Then, on the following four Trans-Vision pages, for the first time in an advertisement, you can take a meter apart piece by piece and see for yourself how it is made.**

# Five vital factors that make this a *Lifetime* meter

There are five major factors that determine the life of a watthour meter. The superiority of the DS and DA meters on these points assures Lifetime performance. These points are:

**1. Range**—sufficient load range to take care of present and future loads. Range means, simply—how wide a range of loads the meter can measure without any loss in accuracy.

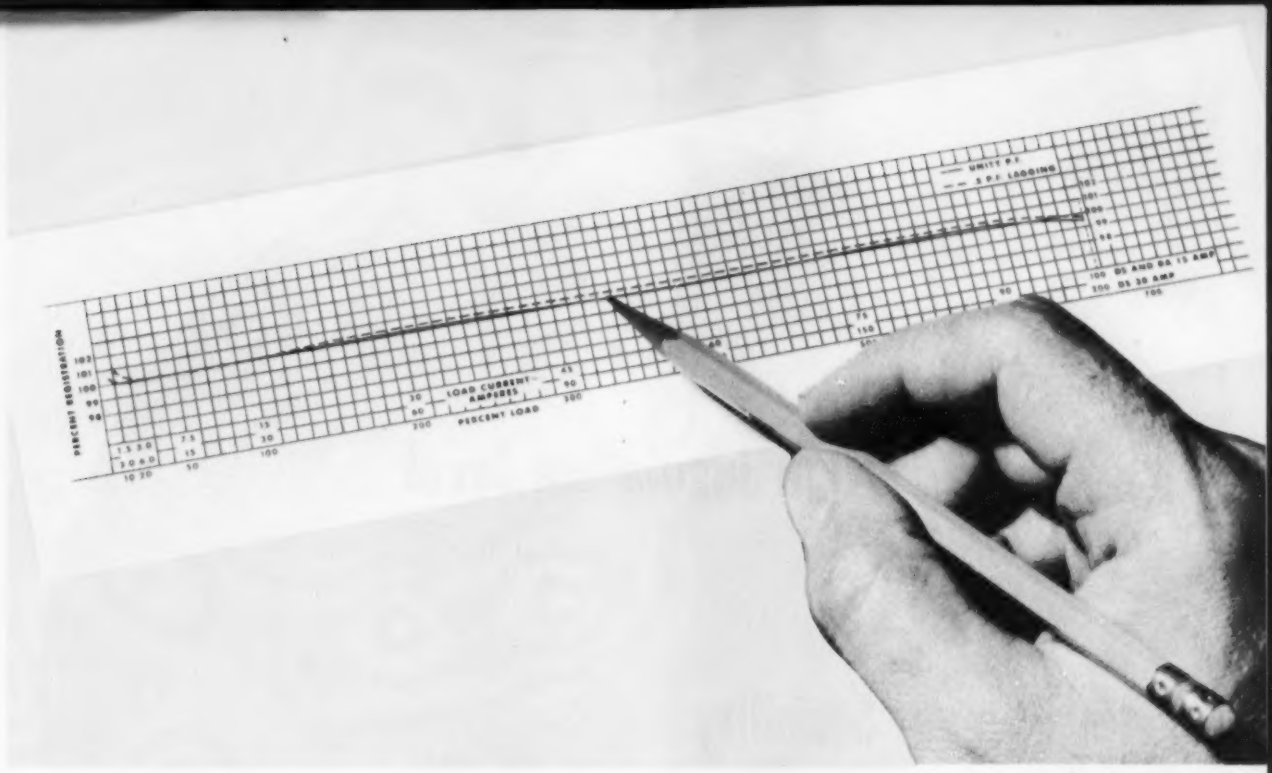
**2. Thermal capacity**—the ability to give good service and long life at extreme temperatures and high overloads. Thermal capacity is achieved through better connections, heavier wire and better insulation.

**3. High insulation level**—the ability to withstand high-voltage surges without damage. This factor is becoming increasingly important as the current trend to suburban living means more and longer lines to outlying areas where exposure to lightning is more of a problem.

**4. Stability**—long-time accuracy of a meter is possible only when the meter is inherently stable—mechanically, electrically and magnetically.

**5. Corrosion protection**—all materials and finishes must be selected and coordinated to give maximum protection against corrosion for long life, low maintenance.

**Read on the next two pages how the Lifetime meter is superior on these five vital points** ——→




# You get straight-line accuracy to 667% of rating

### Range

Electric utilities are now faced with the necessity of replacing many old meter installations because they do not have the range required for modern loads. For the replacement of such meters and to provide for any single-phase metering requirements in the foreseeable future, Westinghouse has introduced the Lifetime meter—a meter with a truly amazing range.

This new meter is available in socket and bottom-connected construction to measure loads accurately from less than 0.1 to 100 amperes. It is also available in another rating in socket construction for accurate measurement of loads up to 200 amperes. This range is sufficient for all present and foreseeable future loads, except those requiring an instrument transformer. As evident in the load curve above, Lifetime meters give straight-line accuracy over their entire range.

While no one can predict the future, it seems reasonable to say that when loads do grow beyond the range of the Lifetime meters, they will cease to be single-phase loads. This new meter provides adequate insurance against obsolescence due to accuracy and load range.

### Thermal Capacity

Superior thermal capacity is achieved in the Lifetime meter through the use of wire with more current-carrying capacity, by using brazed connections instead of screw connections, and through the use of improved insulating materials. The industry requirement for a 100-ampere meter will not permit a temperature rise above 55° C at maximum load. The Lifetime meters are not only well within this limit, but are built with insulation that can take even greater temperatures than the limit allows!

**Turn the page for more reasons why this new meter gives Lifetime performance** ——→

Westinghouse

★ **High insulation level**

★ **Stability**

★ **Corrosion protection . . .**

## . . . Vital factors that mean long meter life

### High Insulation Level

Both the current and the potential coils have a 15,000-volt impulse insulation level. Additional surge protection is provided by De-ion® gaps which discharge at 4500 volts, well under the 15,000-volt impulse insulation level of the coils.

### Stability

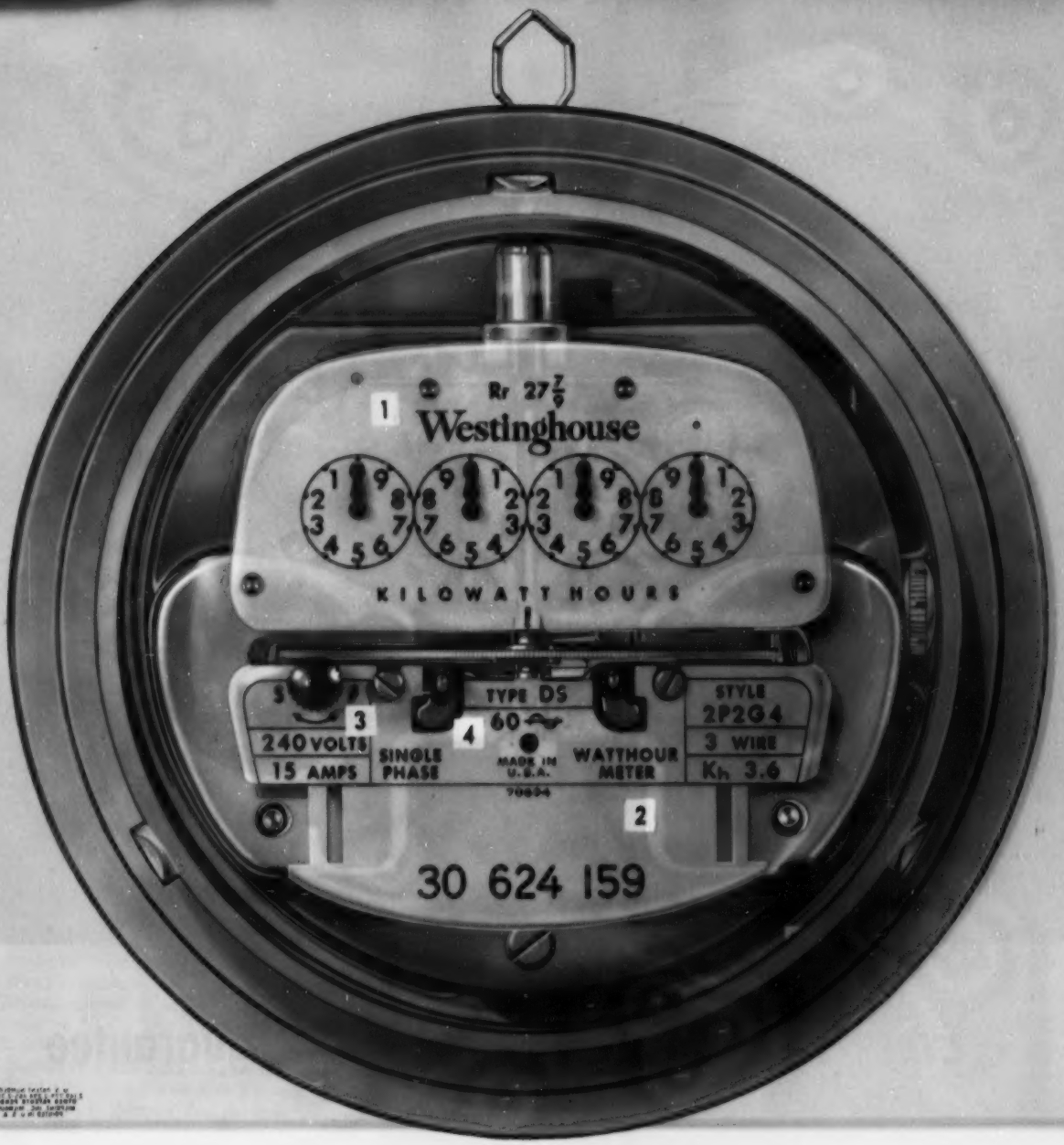
The Lifetime meter is designed mechanically, electrically and magnetically for accuracy and stability under all conditions. It has the kind of stability required for *long-time* accuracy.

### Corrosion Protection

Every component in the Lifetime meter is built to resist corrosion. Tests show that all parts of the meter have maximum corrosion protection.

**See for yourself why this new meter gives Lifetime performance.**

YOU CAN BE **SURE**...IF IT'S



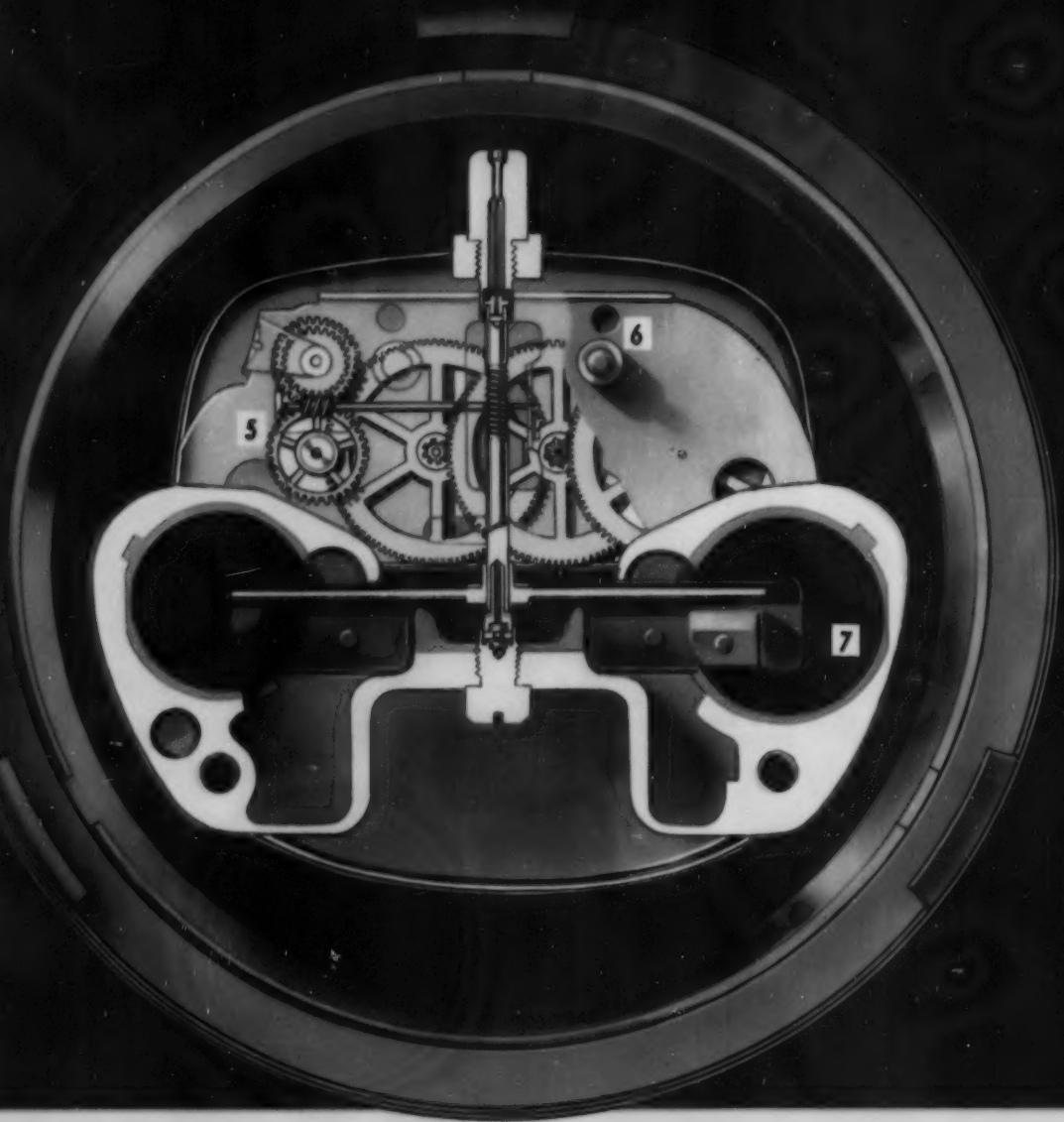

**1. THE FINISH** on the register dial of the Lifetime meter is baked methacrylate resin that stays white under all conditions. Dial will not crack, discolor or chip. It is impervious to heat, cold, humidity and corrosive atmospheres.

**2. NAMEPLATE** has same durable finish as the dial. It is separate so meter keeps its identity, even if register is changed. Ample space is available for mounting various types of utility identification. Extra-heavy construction of nameplate prevents accidental damage. The serial number on the Lifetime meter is larger, easier to read.

**3. FULL LOAD ADJUSTER** is spring loaded, can be operated by hand or screw driver. Both the light load and full load adjusters are linear, 1% per turn, ± 10% range. This range of adjustment assures interchangeability of electromagnets.

**4. DISC GUARDS** are cast into the frame to prevent disc damage when the meter is laid on its face during inspection or maintenance.

Westinghouse




**5. GEARS AND SHAFTS** in the register are precision made, accurate. The plate construction of the register provides rigid support and permanent alignment of the gears. Registers are protected from corrosion through the use of iridited aluminum plates and gold-finished shafts and gears.

**6. BAYONET MOUNTING** of the register gives it rugged support. Precision machining of these supports assures correct alignment, eliminates any need for adjustment of register mesh.

**7. FOR ADDITIONAL MECHANICAL AND ELECTRICAL STABILITY,** damping magnets of Alnico are mounted in the aluminum frame. There is no change in calibration from a 40,000-ampere, 20 x 50-microsecond wave.

YOU CAN BE **SURE**...IF IT'S

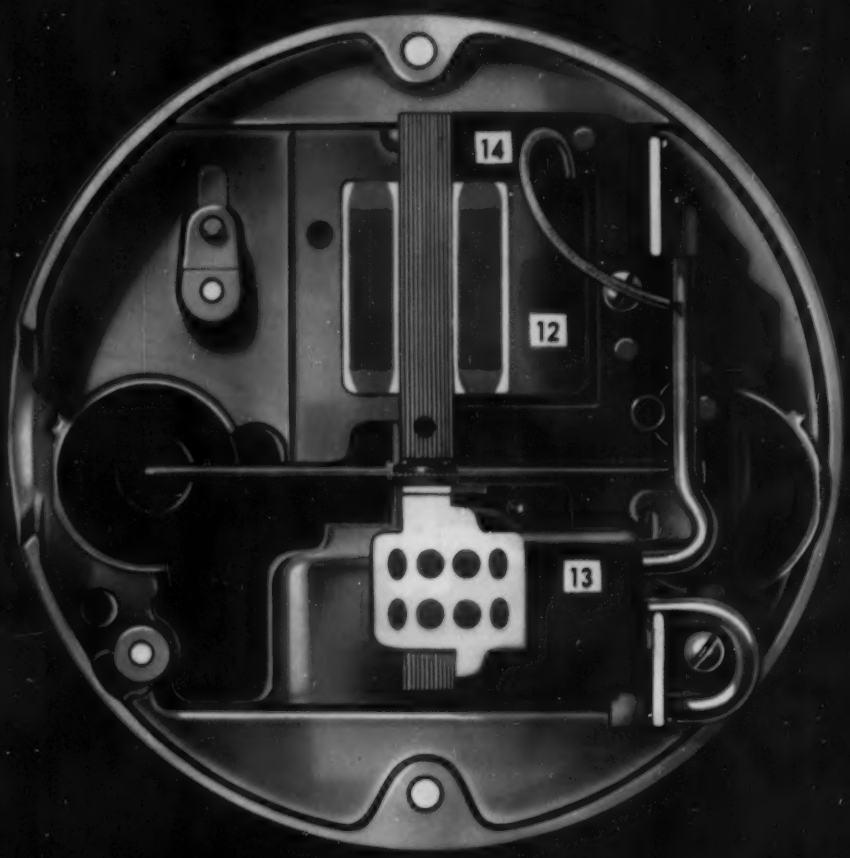
**8. THE HEAVY DIE-CAST ALUMINUM FRAME** provides rigid and accurate support for all meter elements.

**9. FLEXIBLE UPPER GUIDE BEARING** of hardened chrome steel fits into a non-lubricated, removable bronze bearing in the shaft.

**10. BALL AND JEWEL BEARING,** pioneered by Westinghouse in 1902, is the only time-proved Lifetime bearing. Utility records show that under normal conditions the life and performance of this bearing are practically unlimited.

**11. BAYONET MOUNTING HOLES** for register simplify mounting or removal.

Westinghouse

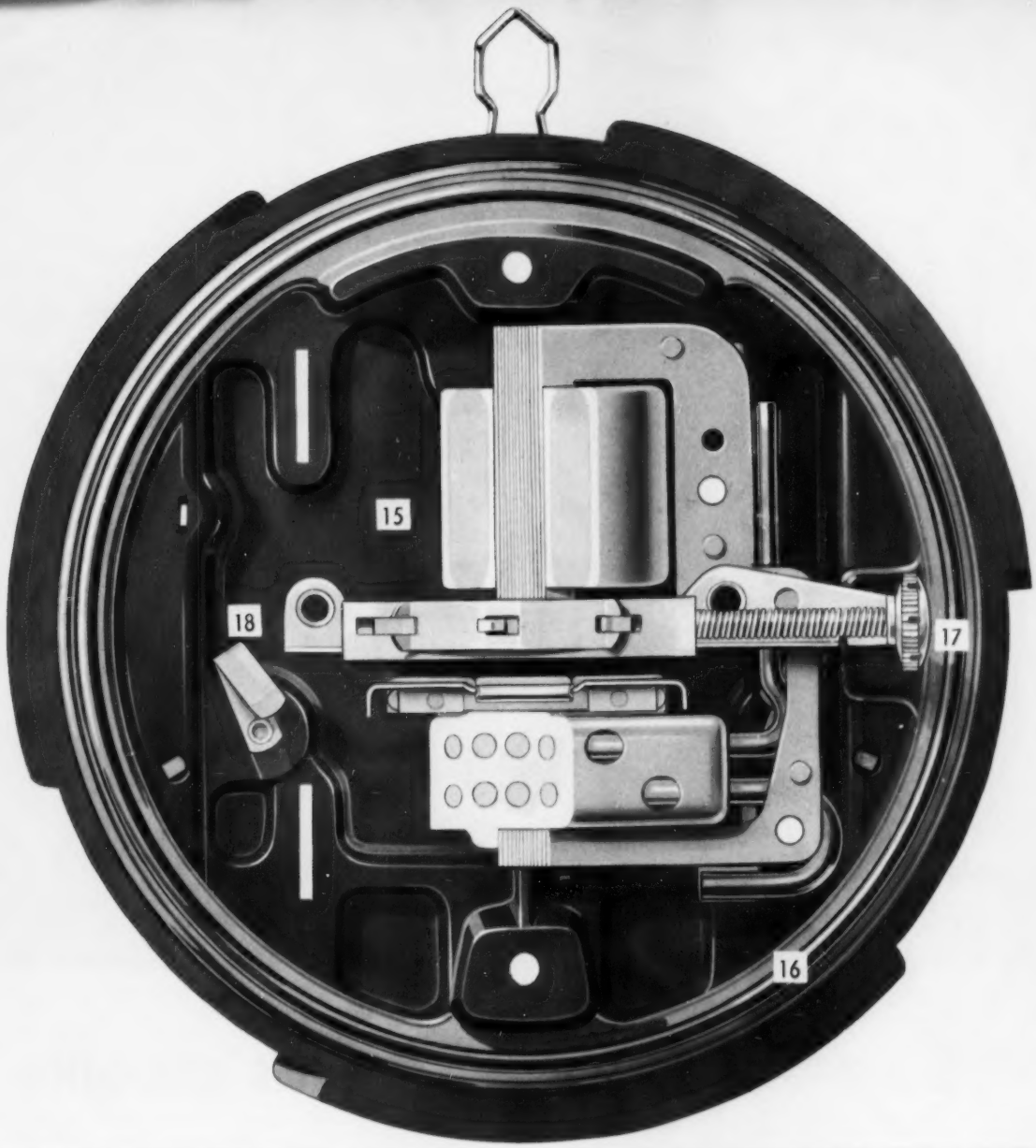



**12. POTENTIAL COIL** is vacuum impregnated with a time-tested thermosetting polyester resin which serves both as an insulation and a bond. Coil has a 15,000-volt impulse insulation level for greater safety and protection.

**13. CURRENT COIL** conductor is extra heavy. Coil is form wound, then a new polyester insulation is molded around coil and laminations. Impulse insulation level is 15,000 volts. Blades are brazed to coil leads for a permanent, solid connection. The insulation in both the current and potential coils does not deteriorate or give off corrosive fumes when subjected to overheating.

**14. THE LAMINATIONS** are made of a better grade of silicon steel. They are annealed, then Bonderized to resist corrosion. Laminations are riveted together at ten places to insure a permanently solid stack.

YOU CAN BE **SURE**...IF IT'S Westinghouse

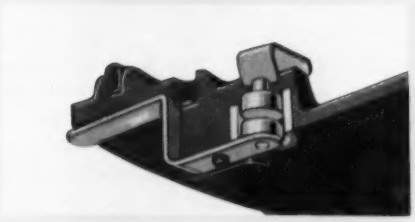



**15. THE BASE** is made of Moldarta*, a rugged thermosetting insulating material which not only withstands high voltage without breaking down but also gives off no corrosive vapors even when subjected to extreme temperatures.

**16. A COVER GASKET** of extruded tubing is recessed into the base so as to compress and hold itself snugly in place.

**17. LIGHT LOAD ADJUSTER** is located on the side of the meter. It is also spring loaded and can be operated by hand or screw driver from side or front of the meter.

**18. SPRING CLIPS** make contact with the current coil leads. Surges are conducted through these clips to De-ion arrester gaps.



*Trade-Mark

These De-ion gaps discharge outside the meter at 7000 volts impulse, well under the 15,000-volt impulse insulation level of the coils. Ground straps in the back of the base are replaceable without removing the cover, if they are burned by repeated surges. However, the De-ion principle minimizes burning of the contacts by repeated surges.

# Every *Lifetime* meter has this guarantee

*Westinghouse, in connection with Type DA and DS meters, will replace any defective part which fails under proper and normal use during the life of the meter which, for the purpose of this guarantee, is thirty (30) years from date of shipment. The replacement part will be shipped prepaid, and such shipment shall fulfill all Westinghouse obligations in respect to said meter. Westinghouse shall not be liable for consequential damages.*

This outstanding guarantee is possible because Westinghouse has designed and built the five factors of range, thermal capacity, high insulation level, stability, and corrosion protection into its Lifetime meter.

This meter will give you safe, dependable, Lifetime performance. It will measure the growing residential loads of today and tomorrow—accurately, economically.

To get top meter performance, specify the new Westinghouse Lifetime meter. For additional information, contact your Westinghouse representative or write Westinghouse Electric Corporation, 3 Gateway Center, P. O. Box 868, Pittsburgh 30, Pennsylvania.

YOU CAN BE **SURE**...IF IT'S

**Westinghouse**

CP-1025

Printed in U.S.A.

## IES

**Pacific Northwest Region,** Illuminating Engineering Society, will hold its annual meeting at Harrison Hot Springs, B. C., April 25-26, 1955, according to R. G. Scott, B. C. Electric Co., conference chairman.

**Southern California Section** began its fall season Sept. 8 when James McCracken, display manager of Sears, Roebuck & Co., spoke on visual merchandising with light. W. D. Jones, engineer for the William J. Moran Co., Edward Balogh, engineer of Sunbeam Lighting Co., discussed higher voltages for commercial and industrial lighting systems at the study club.

**San Diego Chapter** opened Sept. 2 with J. Roy Jones, Westinghouse Lamp Division, Los Angeles, as speaker on "Lighting Design and Calculations." For the Oct. 7 meeting at State College, Hunton D. Sellman will discuss and demonstrate "Stage Lighting."

**Mother Lode Chapter** in Sacramento elected William J. Flynn, Sacramento Municipal Utility District, as chairman; William Ross, G-E Lamp Division, vice-chairman; Joseph K. Cannon, PG and E, secretary-treasurer; and on the board of managers, John P. Hobrecht and Myron C. Cady.

**San Jose Chapter** heard from Leonard A. Hobbs, IES regional and Smoot-Holman vice-president, at its Sept. 22 meeting, speaking on "Future Lighting Trends."

**B. C. Section** seated T. H. Doherty as the 1954-55 chairman at its Sept. 16 meeting in Vancouver and heard color discussed by two authorities, Lionel Thomas, school of architecture, University of B. C., and Lloyd Hunt of General Paint Corp. of Canada.

**Northern California Section** made a guided tour of the new San Francisco International Airport for its first fall meeting, Sept. 23, and heard from engineers, Albert Kritchard and Clyde Bentley, about its design.

## IAEI

**Arizona Chapter,** International Association of Electrical Inspectors, elected A. W. Thomas, Phoenix, its chairman; Bill Strube, Prescott, and H. Pacheco, Tombstone, as vice-chairmen. Les Waggoner of Phoenix is secretary - treasurer. Meetings are scheduled for Sept. 18, Nov. 13, Jan. 8, March 12 and May 14.

## NECA

**Santa Clara-San Benito Chapter,** National Electrical Contractors Assn., received its charter at its Sept. 13 meeting. Ed Buttner, NECA District 6 vice-president, and Matt Sherwood, field representative, made the presentation.

**Crowd of 117, most of them contractors, attended the annual area meeting to hear . . .**

**Jack Hicklin, vice-president, First National Bank, Larry Holzman, manager San Diego Wholesale Credit Assn. (seated), Jack Thompson, president, San Diego Federal Savings & Loan Assn., Charles Considine, CPA, Al Myers, chairman Electrical Contractors Division, and Mel Tate, FHA manager for S. D. Federal Savings & Loan, discuss modernization of wiring potentials if they . . .**

# Put FHA Title 1 to Work in San Diego

After the group of financial men above had been featured at the second annual area meeting of the Electrical Contractors of San Diego County, a division of the Bureau of Home Appliances, a program was developed and will start with television shorts Oct. 3, for 13 weeks. Its aim is to get San Diego County home owners to remodel their wiring with FHA loans. A number of contractors, the financial agencies, electrical distributors and San Diego Gas & Electric Co. are participating. The contractors division also plans a big meeting Oct. 21 to celebrate Light's Jubilee.

# PANORAMA OF THE PCEA

## Sections Planning Year's Activity

PCEA's three sections are busily at work with plans for their meetings and activities, and key committees have been or are being formed. The first section meeting scheduled is the Administrative Services Section's joint meeting with the Accounting Section of the PCGA at the Sir Francis Drake Hotel in San Francisco on Nov. 18 and 19. The four principal topics to be discussed will be: (1) credit and collection; (2) pay roll accounting; (3) building preventive maintenance; (4) stores.

Two other sessions also have been scheduled by the Administrative Services Section. It will have a special two-day seminar at the Hotel Statler, Los Angeles, Feb. 23 and 24, 1955, on "Centralized Integrated Data Processing By Electronic Machines." This will be a joint meeting with the PCGA. Then later next year, April 7 and 8, the section will have a session at the Jokake Inn, Phoenix, Ariz., where the following topics will be covered: (1) plant expenditures; (2) purchasing; (3) records management; (4) land and rights-of-way.

To coordinate the section's program with the Accounting Section of the PCGA, the Administrative Services Section's planning and coordinating committee has been appointed and includes J. T. McNab, Arizona Public Service Co.; F. W. Mielke Jr., Pacific Gas and Electric Co.; George Coughlan Jr., PG and E: H. L. Moore, Southern California Edison Co.; R. I. Meyerholz, PG and E; E. R. Peterson, Southern California Edison Co.; F. U. Naylor, PG and E: William deWaard, San Diego Gas & Electric Co.; Dexter Stoner, PG and E.

This year the Business Development Section will not hold regional meetings with traveling programs as it has done for the past two years. In recognition of the need for the industry to unite in facing current problems, the section's guidance committee suggested, and the board approved, the reactivation of many of the section's committees which have been functioning recently as discussion groups, and a general conference of all the newly activated committees. If any area requests a program on a specific subject for a local meeting, the committee will aid in its preparation. However, the committee's major efforts will be concentrated on the general conference which will be held in Fresno at the Hotel Californian on Jan. 27 and 28, 1955.

Newly appointed members of the Business Development Section's guidance committee are: chairman, J. A. Corlett, General Electric Co., San Francisco; vice-chairman, J. H. Adams, Southern California Edison Co.; A. A. Reitman, G-E Lamp Division, Los Angeles; Christine Dent, Westinghouse Electric Corp.; E. W. Meise, San Diego Gas & Electric; C. V. Soper, Southern California Edison; G. H. Sullivan, Southern California Edison; Robert Thunen, Sylvania Electrical Products Inc., Oakland; D. V. Doub, PG and E; W. F. Lambirth, California Electric Power Co.; Jack Kiedaisch, Arizona Public Service; C. D. Bronson, California Electric Co., Oakland: D. F. Roach, Westinghouse Electric Corp., San Francisco; George Larsen, Larsen-Hogue Electric Co., Los Angeles; J. S. C. Ross, PG and E; P. L. Mullenbach, BullDog Electric Products Co., Los Angeles.

The Engineering and Operating Section has planned its meeting for March 7 and 8, 1955, at the Huntington Hotel in Pasadena. The section's guidance committee, each member of which is a group sponsor, includes: chairman, Willis T. Johnson, California Electric Power; vice-chairman, F. E. Bodine, Westinghouse Electric, San Francisco; E. W. Trenkle, Arizona Public Service, sponsor, meter group; H. E. Pangborn, California Electric Power, sponsor, system operations group; F. I. Nagle, Southern California Edison, sponsor, underground transmission and distribution group; J. F. Sinnott, San Diego Gas & Electric, sponsor, overhead transmission and distribution group; K. E. Ducker, Southern California Edison, sponsor, communications group; W. T. Lucking, Arizona Public Service, sponsor, steam generation group; I. M. White, Pelton Water Wheel Co., sponsor, hydro generation group; Hal Soliday, The Fluor Corp., Los Angeles, sponsor, engineering design group; E. F. Hockenbeamer, PG and E, sponsor, transportation group; Whitman Ridgway, General Electric, San Francisco, sponsor, substation group; R. W. White, PG and E, chairman, accident prevention committee; R. L. Engle, Allis-Chalmers Mfg. Co., Los Angeles, member-at-large; C. D. Ramsden, Pacific Coast Engineering Co., Alameda, member-at-large; Karl Bausch, Bechtel Corp., San Francisco, member-at-large; W. L. Moats, Westinghouse Electric, Los Angeles, member-at-large.

### New Directors

In compliance with the recently amended bylaws of the association which added four more directors to the board, the following new directors have been appointed:

Fred G. Goss, president, Electrical Supplies Distributing Co., San Diego; William E. Cranston, president, Thermador Electrical Mfg. Co., Los Angeles; J. M. Tuttle, Western sales manager, Motorola Inc., San Mateo; A. J. Schmitz, manager, Pacific region, Allis-Chalmers, San Francisco.

Because of his retirement from Pacific Gas and Electric Co., James F. Pollard has resigned as PCEA treasurer. Kenneth C. Christensen, treasurer of PG and E, has been appointed by the board to succeed him.

### EMEA

**Electrical Maintenance Engineers Association** of Southern California made a field trip to the new Anheuser-Busch brewery Aug. 24 and 25 in lieu of the regular monthly meeting. About 300 attended. EMEA office moved Aug. 1 to 1052 W. Sixth St., Room 426, keeping the same telephone number. Robert Marcum of Hughes Aircraft was appointed by the directors to fulfill the unexpired term of Jack Pyle on the executive committee. The latter resigned on account of illness. Annual bosses' night was Sept. 15.

### MANA

**Manufacturers' Agents National Assn.** elected Fred R. Young of Seattle, Wash., as its president at a recent annual meeting. Vice-presidents include E. A. Wilcox of San Francisco; A. B. Smedley of Altadena, Calif., was elected executive treasurer; and Albert M. Solen, Denver, and C. F. Bowers, Los Angeles, are directors. Membership includes about 1,600 agents throughout the nation. A. X. Schilling is executive secretary and headquarters are 1724 W. Main St., Alhambra.

# *The Reader* AUDITED PAID ABC CIRCULATION *His Mark*

THE ABC SYMBOL, which appears at the head of this page, is your brand—the reader's brand—on this magazine. It stands for Audit Bureau of Circulations. It means that this magazine will stay in business only so long as it continues to serve its readers to their satisfaction.

That Bureau—known for short as ABC—is a voluntary, nonprofit, cooperative association founded in 1914 by a group of publishers, advertisers and advertising agencies who wanted to establish and maintain higher standards of publishing practices than then prevailed. Its primary and specific purpose was to set up yardsticks to appraise circulation values and to verify the claims of publishers as to their circulations. For the buyer of advertising space this provides an effective means to take some of the guesswork out of buying and to reconcile the conflicting claims of competing publishers. BUSINESS WEEK magazine has aptly described ABC as "the publisher's conscience—and cop."

BUT IN DOING that job, ABC performs another function of high importance to the readers of ABC member publications. It provides a constant pressure on the publishers to keep alive in their staffs a sense of primary responsibility to their readers. That is because the most simple and direct method of making a publication responsible to its readers is to place upon it a purchase price, whether by subscription or newsstand purchase. The right to purchase or to refrain from purchasing a publication gives to the reader and to no one else the power to pass effective judgment on the publisher's success in serving the reading public. Each paid publication will grow or languish, will prosper or fail, in proportion as it wins or loses the following of thousands or millions of readers. The readers, by their patronage, record their judgments as to whether the publisher and his publication are measuring up to their responsibility to them.

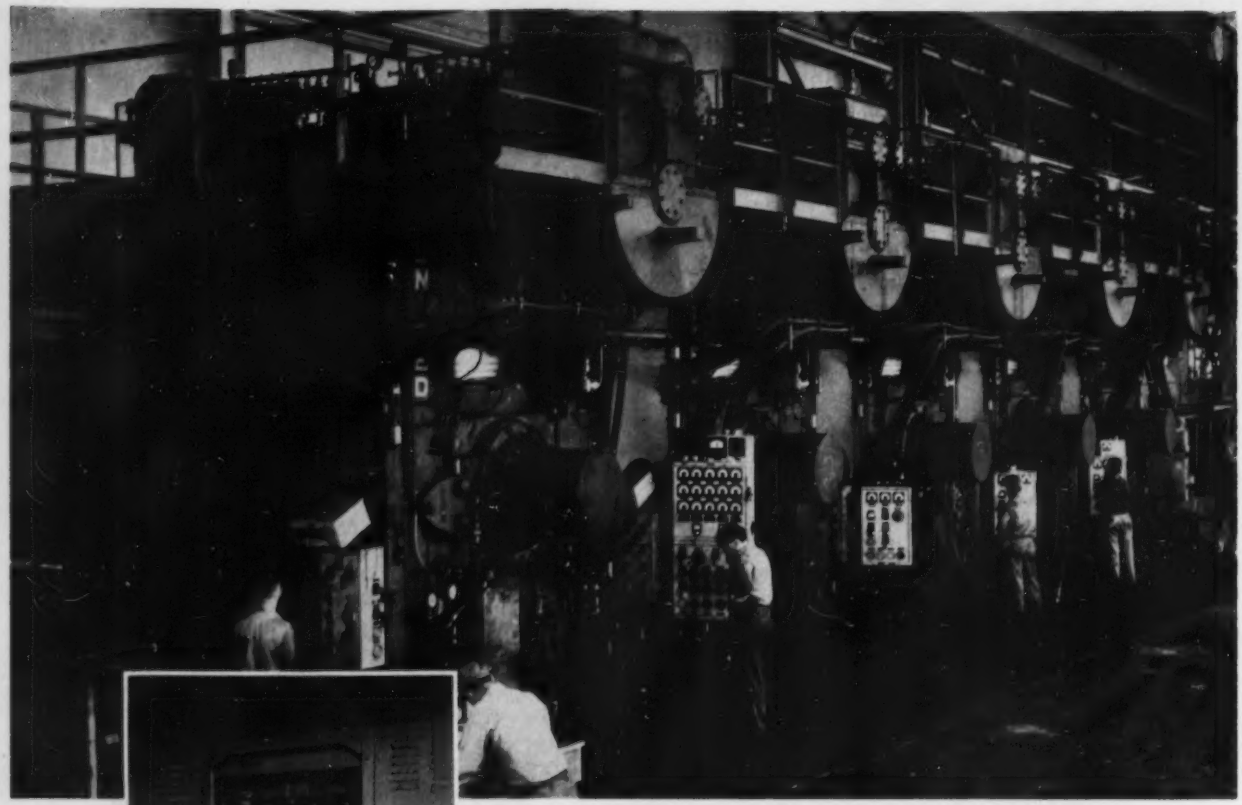
And that is where the ABC comes into the reader's picture. The newspaper or magazine that carries the ABC symbol on its masthead must in the first place be a paid circulation publication. Moreover, it must conform to the high standards set up by the Bureau as to terms of payment and accounting methods. And again it must open all of its books to the auditors of the Bureau on demand.

SINCE THE INFORMATION thus determined by thorough and impartial audit is periodically made public through the ABC statements and audit reports, it is constantly available to and universally used by advertisers who are considering the purchase of space in an ABC publication. These reports show the circulation trend, as verified and certified by ABC, and thus put the advertisers in a position to know whether or not the publisher is rendering satisfactory service to the readers.

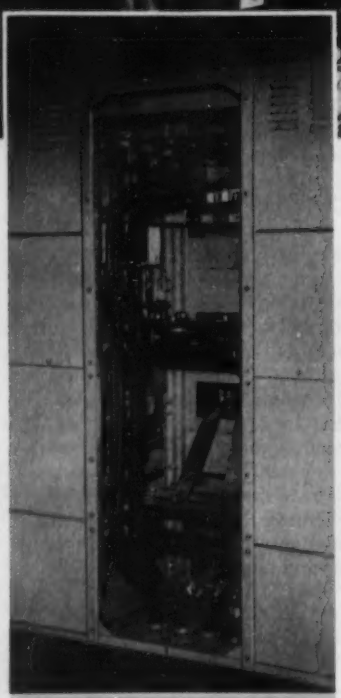
Thus the publisher who submits his publication to the supervision and discipline of ABC affirms in the strongest possible manner that he recognizes his primary obligation is to his readers and that he owes his standing to a voluntary demand by those readers. It follows that the editors of ABC publications must be exceptionally alert to the desires of their readers and responsive to their needs, since any decline in circulation will soon show up in the ABC statements and audit reports.

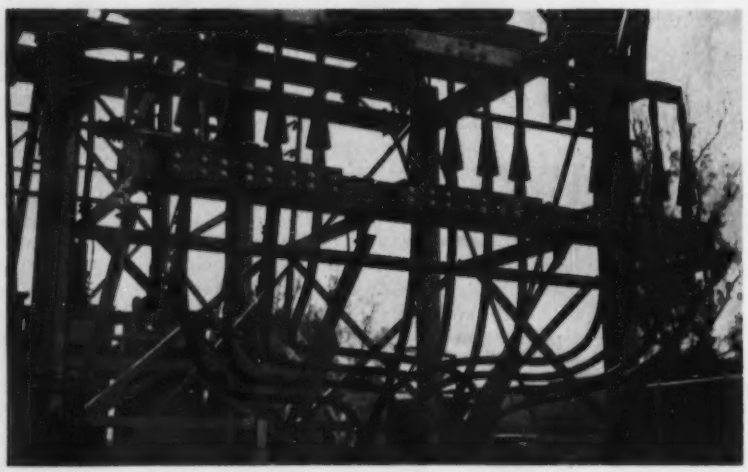
THAT IS WHY we describe the ABC symbol as the reader's brand. It shows that a publication must be primarily responsive to him and that he holds in his own hands its success or failure. And that ABC symbol is not only a constant reminder to him of that fact, but also an equally constant reminder to all concerned that the reader's willingness to pay for the ABC publication is the acid test of its value to him and to the advertiser.

***McGraw-Hill Publishing Company, Inc.***



Cable dependability is of utmost importance to this five-stand cold reduction mill. Cable must be able to withstand high-operating temperatures, corrosive fumes from acid pickling line, oils and abrasives.

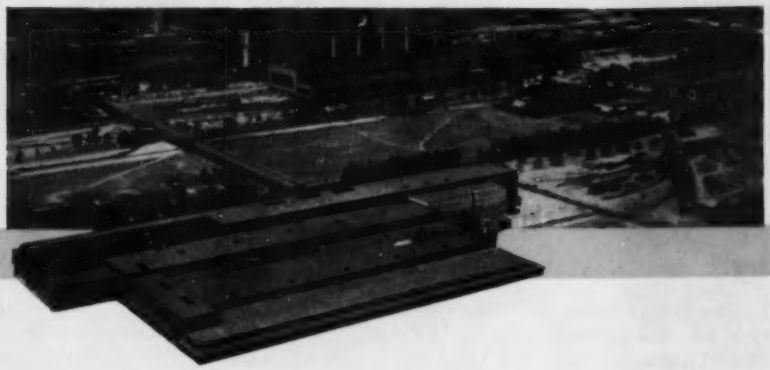




Outdoor connections at switch yard. Note manually prepared terminals.

The 600 volt cable for motor connections and single conductor control cable was RoMarine-RoPrene, style RR-D. All sizes from No. 12 to 1000 CM style RR-D were used for this service.

Multi-conductor control cable in this installation is RoLene (polyethylene) insulated and RoPrene (polyvinyl chloride) sheathed, described by Rome Cable specification CT-2.



Recently built Kaiser Steel Tin Plate Mill (left foreground), Fontana, California. Capacity is 200,000 tons of tin plate per year.

Electrical Contractor:
Kaiser Engineers, Inc.

# How Kaiser Steel licked 3 tough cable problems all at once

In selecting power cables for 6.9 KV circuits at its new Fontana Tin Plate Mill, Kaiser Steel Corporation faced three knotty problems:

**First,** the hazard of acid and alkali corrosion was severe.

**Second,** the threat of electrolytic action was more than a possibility.

**Third,** termination and splicing costs were important factors.

Kaiser's choice for this service fell to single conductor, 500,000 CM Rome RoZone-RoPrene shielded power cable, insulated for 9 KV. Two sets were installed to connect the main substation with two 6,900 volt busses in the tin mill proper. Total connected load to the busses was 19,000 HP of M-G motors and 14,250 KVA of transformers.

**Why RoZone-RoPrene**

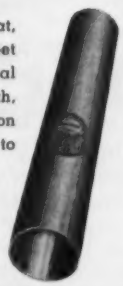
RoZone insulated, RoPrene sheathed cables offer maximum protection against acids, alkalies, oils, greases, moisture, heat, sunlight, and flame. They are non-metallic sheathed and require no lead sheaths with subsequent cathodic protection against electrolysis. Their RoZone (premium quality oil base) insulation provides exceptional resistance to corona action and ozone cutting.

Simple manual terminations eliminate the need for regular wiped potheads. Standard splicing kits only are needed; no costly wiped joints. And the smooth surface of the RoPrene (Neoprene compound) sheath makes for easy working and pulling through conduits and junction boxes.

**HELPFUL INFORMATION**—Whether your electrical requirements involve special cable designs to meet severe service conditions or simple home wiring, consider the advantages Rome products offer from the standpoint of price and quality. For information that you may find immediately useful, send for the *Rome Power and Control Cable Catalog* illustrated below.

500,000 CM, single conductor shielded, RoZone-RoPrene power cable, rated at 9 KV.

To give wires and cables added protection against heat, moisture, corrosion and abrasion, several thousand feet are encased in Rome • EMT. This is a superior electrical metallic tubing, electrically welded for extra strength, with an electrogalvanized exterior surface for protection against corrosion and a mirror-smooth interior surface to prevent cable injury.



***It Costs Less to Buy the Best!***

**You'll get a wealth of helpful information** from the Rome Power and Control Cable Catalog. It contains 65 pages of illustrated information, specification and test data on all Rome power and control cables and on famous Rome insulations. Mail the coupon for your copy today.

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# THE MONTH IN BRIEF

## President Dedicates McNary

Watched by some 30,000 gathered on the Oregon shore, President Eisenhower last month pushed a button starting the fifth 70,000-kw McNary generator and formally dedicated the dam and power house. In his address the President said that there will be more all-federal multipurpose projects but added that "a region that lets itself become completely dependent upon national funds provided by Congress frequently finds that the funds fail to keep pace with local needs." He cited McNary Dam as representative of the coordination of effort that must mark the development of all our river systems and as an example of national responsibility properly assumed by the federal government. Clarifying his views on partnership, he said that "Abraham Lincoln put it better than anyone else has done: 'The legitimate object of government is to do for a community of people whatever they need to have done, but cannot do at all—or cannot do so well for themselves —in their separate and individual capacities.'" Stating that he knew his power policy would not satisfy either extreme, the President declared that it was not intended to. "It is intended to benefit the most of 160,000,000 people. It is based on the common sense counsel of Americans."

## Alaskan Project Given Permit

A three-year preliminary permit for a hydro dam on the Copper River in Wood Canyon, Alaska, was granted by FPC to Harvey Aluminum Inc. of Torrance, Calif. Site is 85 miles above the river's mouth and four miles below its confluence with the Chitina River. A 560-ft-high dam would produce an estimated seven billion killowatthours annually for electrochemical and electrometallurgical industries.

## Two Other Projects Planned

Last month FPC also granted preliminary permits to City of Seattle and East Bay Municipal Utility District of Oakland, Calif. The former proposes a dam and 570,000-kw power house on the Pend Oreille River in Washington, one mile from the International Boundary. The latter would develop the Mokelumne River in California, building three dams and making additions to an existing dam.

## Negotiations With B. C. Reported

Proposal to build a storage dam in British Columbia about 30 miles north of the border to increase firm power at downstream U. S. power houses has been advanced by Henry J. Kaiser. The plan, which could set a pattern for other projects, calls for delivery of 20% of the increase in power generation to the Canadian border or payment in cash to British Columbia at the Bonneville Power Administration's wholesale rate. Kaiser has a preliminary agreement with the Canadian province and on Sept. 24 representatives of Kaiser Aluminum & Chemical Corp. of Oakland, Calif., met in Portland with officials of BPA, Corps of Engineers and Bureau of Reclamation. If negotiations are successful, a low-head dam, 35 to 40 ft high, would be built at Castlegar Narrows at the foot of the Long Arrow Lakes. It would provide 3,000,000 acre-ft of usable storage and would cost approximately $25,000,000. Generation of electricity at the site was declared neither economical nor sound. Kaiser, who uses BPA power for his Tacoma and Spokane operations, has warned that threatening shortages of low-cost power would affect industrial expansion in the Northwest; has said that not enough is being done to increase supply.

## Grant County Files Suit

Grant County PUD has filed suit at Ephrata, Wash., to prevent the Washington State Power Commission from proceeding with plans to construct a $350,000,000 dam on the Columbia at Priest Rapids. (EWEST, September, p 124.) In its suit, the PUD says it declared its intention to build the dam in May 1952, started legal action to acquire the dam site by condemnation and invested a considerable sum in exploratory engineering. It argues that the commission exceeded its authority when it declared intent last July to construct a dam at Priest Rapids. It also holds that the state commission conflicts with the authority of the Federal Power Commission; challenges the law that created it. The district seeks to prevent the commission from holding any hearings on which agency should build the project and from taking further steps to secure a preliminary permit. It also would restrain the state director of conservation and developments from holding hearings on the matter.

## Investment Men Tour System

Representatives of more than 40 leading banks and investment houses inspected the five-state service area of Pacific Power & Light Co. in September as guests of PP&L officers and directors. Traveling in three chartered planes the visitors, principally from the East and Midwest, covered more than 3,000 miles in five days; met some 2,000 local businessmen. Commenting on the tour, PP&L President Paul B. McKee said: "A tremendous amount of utility development capital will be needed in the next few years to meet the growing power requirements of the Pacific Northwest. We want men active in the financial world to know at first hand of the nation's assets and of the opportunities to put capital to work here, not only in the electric business but in other fields of development."

## Reorganization Ahead of Schedule

Administrative and functional reorganization of Bonneville Power Administration was made effective Sept. 12 on order of Administrator William A. Pearl. Pearl said reduction in force to a stable 2,100 recommended by a management survey team would be accomplished by Oct. 15. Ahead of schedule, the operational changeover was outlined broadly July 19 following a task force report.

# WATCH IT BEING INSTALLED

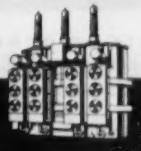
Two big General Electric power transformers recently made news and you can watch them making it in the 23-minute, G-E color movie, ***Power in Place.***

This documentary film shows the whole installation process in clear detail, from sliding the transformer off the flatcar to the assembly of bushings and accessories. Everyone who installs transformers—or would like to see it done—can gain some helpful ideas by watching the installation of a 145,000-KVA unit at the Oak Creek Station of Wisconsin Electric Power Company, and a 135,000-KVA unit at the Delta Station of the Mississippi Power and Light Company. For full information about this educational G-E film, just contact your nearest G-E Apparatus Sales Office. General Electric Company, Schenectady 5, N. Y.

421-20

*Progress Is Our Most Important Product*

GENERAL ELECTRIC



**Power Transformer NEWS**

With factories in Anaheim, Los Angeles, Oakland, Ontario, San Francisco, San Jose, Seattle, and Richland, and Sales Offices in twenty Western cities.

*For the industrial lighting value of your lifetime*

# See! Examine! Compare!

# THE NEW LIFETIME CFI SERIES

***Day-Brite announces the sensational new CFI-25 with 25% upward component and the CFI-10 with 10% upward component—both with important new features that promise a lifetime of unparalleled lighting performance.***

From Day-Brite, the pioneer, came many of the early developments in uplighted industrial fixtures.

Now—from Day-Brite, the leader, comes a great new advancement in industrial lighting—the new *Lifetime CFI series.*

Today, the CFI-25 brings you all the desirable comfort benefits of 25% uplighting *within a practical price range.*

This is a goal sought by many in the lighting industry. A few manufacturers have actually marketed 25% uplighted fixtures. Until now, none had succeeded in keeping fixture costs within reasonable limit

Day-Brite—and only Day-Brite—offers you advanced visual comfort for industry at an economically justified price. If you can afford *any* industrial lighting, you can now afford the lifetime benefits of the finest fixtures ever to reach the market.

## See! Examine! Compare!

**FULL 8-FOOT PORCELAIN REFLECTORS!** An exclusive *Lifetime CFI* feature! Competitive fixtures give you two 4-foot reflectors to form an 8-foot section—twice as many pieces to handle during installation, twice as many joints to interfere with alignment of runs. Another exclusive: every square inch of reflection surface is finished in snow-white Lifetime porcelain enamel. Apertures die-embossed for strength and appearance.

**CFI-25 REFLECTOR SUPPORTS 358 POUNDS!** Here's a rugged test for any reflector. Supported only at its extreme ends, the 8-foot CFI-25 reflector remains perfectly straight and rigid bearing the full weight of a 358-lb. man—no bend, no sag, no spread. That's because new ribbed construction reinforces lateral stability and a longitudinal "V" louver reinforces lengthwise rigidity (and also provides comfortable 30° cross-wise shielding). These super-rigid reflectors assure straight, true alignment of fixture runs.

## See! Examine! Compare!

*Complete details of the CFI-25 (left) are covered in Bulletin OD-626. The CFI-10 (right) is described in Bulletin OD-625. Write for either or both today! Day-Brite Lighting, Inc., 5412 Bulwer Ave., St. Louis 7, Mo. In Canada: Amalgamated Electric Corp., Ltd., Toronto 6, Ontario.*

# See! Examine! Compare!

You must see this revolutionary new industrial series yourself to appreciate the lifetime advantages it offers. Examine the CFI-25 and the CFI-10. Compare them with other industrial fixtures. Mark your calendar now to arrange a *Lifetime CFI* demonstration—and know firsthand why this new series is the industrial lighting value of your lifetime!

"DECIDEDLY BETTER"
**DAY-BRITE**
*Lighting Fixtures*

496

**CALL OR WRITE YOUR NEAREST DAY-BRITE REPRESENTATIVE**

# THIS MONTH'S NEWS

## New Generation Critically Needed, BPA Report Says

"Serious and growing" deficits of electric energy for the Pacific Northwest by 1961-62 unless new generating capability is undertaken by regional utilities are predicted in the Bonneville Power Administration's 1954 Advance Program.

First such annual report by Administrator William A. Pearl, the program places emphasis on the partnership concept of water resources development and promises cooperation with all groups, public and private, who propose to do their share in augmenting the power supply.

Resources of the pooled operation, which have increased by 1,017,900 kw of hydro between Jan. 1, 1953, and July 1, 1954, had a combined peaking capability of 7,460,000 kw on June 30, 1954. Projects underway are scheduled to augment this with some 4,000,000 kw in the next eight years and the region should meet firm power loads, including residential and commercial growth, for the next few years even if stream flow falls to critical levels. But even during this era of grace industry will have slight prospect of gaining loads and would run risks in dry years, the report warns.

"Studies made in cooperation with nonfederal utilities indicate that western group utilities in the Northwest Power Pool will be unable to meet all their firm loads under minimum water conditions by the year 1961-62, even with the use of relatively high-cost steam," the report continues. "The western group will have increasing deficits in prime capabilities, increasing from 200,000 kw in 1961-62 to 800,000 kw in 1963-64. This does not include provision for new electroprocess industries, which could be attracted to the Pacific Northwest if low-cost power becomes available. Such potential loads are estimated by BPA to be in the neighborhood of 3,000,000 kw."

Nonfederal utilities have 33 hydroelectric projects and additions with capacity totaling over 5,400,000 kw under consideration in the Washington, Oregon, Idaho and western Montana pool area. This will be a help in the future supply picture but the report comments: "How many of these will actually be built and how soon cannot be predicted at this time. The federal government will continue to undertake large multipurpose projects which are beyond the means of local public and private enterprise."

Stating that the supply picture will mean sharp adjustments on BPA marketing policies by 1963-64, the report said that by that time the load growth of the preference customers will absorb practically all the additional generation from federal plants now under construction. "By that time only 250,000 kw of federal prime power would be available to meet estimated privately owned utility requirements of 1,500,000 kw under critical year conditions."

In appraising loads and resources, the report declares that the system, under critical year hydroelectric conditions, will be "unable to meet the full requirements of its nonpreference customers in any of the years 1954-55 to 1963-64" although amounts of the deficit will vary.

BPA notes distributors of federal power no longer will furnish power for any new or additional industrial load amounting to 10,000 kw or more in any one year unless an adequate supply is available. Future transmission program is outlined in three phases of development bevond BPA's 6,377 circuit miles and 158 substations (4,609,750-kva transformer capacity). The first phase contemplates major additions to be completed by January 1958, principally extra high voltage lines; the second, January 1958-1962, will expand the system to transmit power from The Dalles project and reinforcements for existing facilities; the third calls for major additions required to integrate generating plants not now under construction and where wheeling arrangements cannot be made with public or private agencies.

## Puget Sound Has Preliminary Permit for Baker Project

A three-year preliminary FPC permit was issued in August to Puget Sound Power & Light Co. for its proposed Baker River hydro development. The project would include a concrete dam at the Engletrout site, a short distance above the head of Puget Sound's Lake Shannon reservoir and a power house with an installed capacity of about 60,000 kw. Reservoir would be about nine miles long.

## Tacoma Approves Bonds for Cowlitz River Projects

Tacoma City Council has approved ordinances establishing a $146,000,000 bond issue for construction of two hydroelectric dams on the Cowlitz River at Mayfield and Mossyrock, as recommended by the Public Utilities Board.

The cost of bringing in power from the Cowlitz will be less than the cost of buying power from the Bonneville Power Administration, in the face of an expected 25% increase in Bonneville rates within two years, the council was told by Dean Barline, public utilities director.

At least part of the Bonneville increase will have to be passed along to City Light customers in the form of higher rates, said Barline, "but our dams will keep rates from going still higher."

## Commission Approves Sale of Transmission Line to BPA

Oregon Public Utilities Commissioner Charles H. Heltzel has approved sale of a 20-mile section of 120-kv transmission line of California-Oregon Power Co. to the Bonneville Power Administration. Price is $249,979.

The section is a segment of the company's Dixonville-Roseburg-McKinley No. 20 line in the Douglas-Coos Counties of southwestern Oregon. Bonneville, which purchased the eastern section of the same line last year, reported plans to rehabilitate the line and increase its capacity. Later BPA expects to connect the line to another to be built from Eugene to Reston.

Federal Power Commission approval has been requested.

• **Alaska** potentially has sufficient low-cost hydroelectric power to support a chemical industry, federal and territorial officers concluded after meeting at Juneau with Charles C. Concannon, Department of Commerce chemist. Electrical energy could be available at a cost of less than 5 mills per kwh in southwestern Alaska and on the Keni Peninsula, they agreed. Production of ammonium nitrate to offset the territory's dependence on imports of plant food was mentioned as one of the possibilities.

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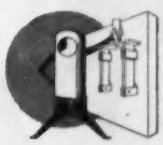
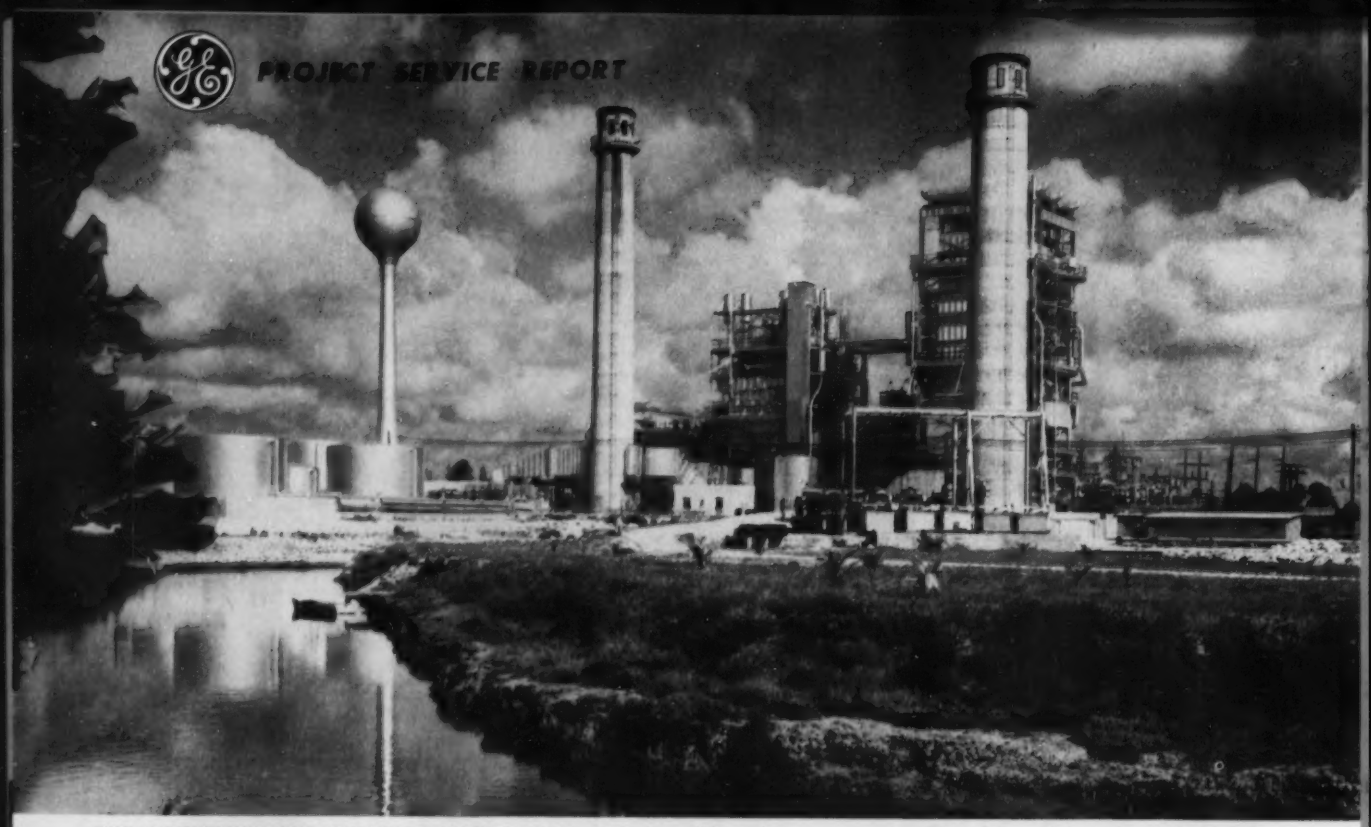


PROJECT SERVICE REPORT



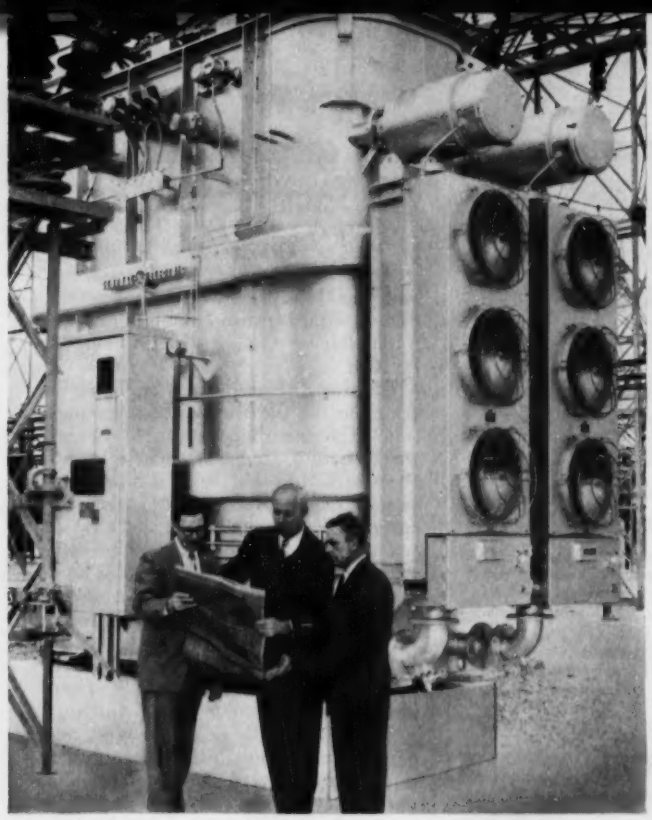
**TWO G-E TURBINE-GENERATORS PRODUCE** 130,000 kw at Cutler Station of Florida Power and Light Co., Miami, Fla., to handle rapidly increasing industrial and residential loads of this growing area. Throughout construction, F. P. & L. and their consultants, Ebasco Services, Inc., received consolidated project reports on manufacturing details and shipping dates of all major electrical equipment.

# General Electric helps Florida P. & L. keep

**A TURBINE-GENERATOR,** 80,000 kilowatts, the newest G-E unit at Cutler Station, is tandem-compound, double flow, 3600 rpm. Manufacturing time was kept to a minimum since early planning reserved factory space.

**B ADDITIONAL CAPACITY** is already on order for F. P. & L. to meet Florida's rapid growth. President R. H. Fite (center) of F. P. & L. discusses the installation of a new 135,000-kw G-E unit (going in service next year) with J. W. Lacy, G.E., and H. V. Street, F. P. & L's. Chief Engr.

**C SYSTEM REQUIREMENTS** are discussed by F. P. & L.'s H. W. Page (left), Manager Power Supply and George Kinsman, Vice President. Early planning with G-E Project Team helped F. P. & L. meet growing power requirements on time.



**MAIN POWER TRANSFORMER** is forced-oil air-cooled, 42,500 kva. L. H. Hill, Jr. (left), G-E Transformer Specialist, E. J. Pearch, Station Supt. and J. W. Lacy, Jr., G-E Office Manager, discuss time saved by upright shipment in one-piece tank.

**EBASCO SERVICES** confers in New York with G-E Sales Engineer W. Luxton. Left to right: F. A. Ritchings, Chief Mechanical Engineer, W. H. Colquhoun, Engineering Manager, Mr. Luxton, and H. L. Lowe, Chief Electrical Engineer.

**OUTDOOR SWITCHGEAR** connections are reviewed by E. A. Bird, Ebasco Const. Supt., W. J. Blad, G-E Service Engineer, and Mr. Pearch. Project Co-ordination greatly simplified scheduling of numerous components.

# ahead of growing power requirements

## Project co-ordination by G.E. on 80,000-kw addition to Florida Power and Light's Cutler Station proves planning, teamwork pay-off

Cutler Station of Florida Power and Light, located near Miami, is an outstanding example of the utility industry's bold answer to the problem of sky-rocketing load growth in many areas. General Electric worked with F. P. & L. and its consulting engineers, Ebasco Services, Inc.—co-ordinating application engineering, product specifications, manufacturing and design cycles and scheduling of electrical equipment deliveries to help make sure the station went on the line on time.

In the expansion of this outdoor station, as in many stations throughout the country, Project Co-ordination has demonstrated its contributions to the planning, engineering, and successful operation of electric utility generating plants.

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## THIRD COULEE POWER HOUSE NOT FEASIBLE IS REPORT

Although a third power house could be built at Grand Coulee Dam, an engineer who studied the proposal for two years believes it would not be feasible. It would cost too much and there might not be enough water to run it, he says.

Charles S. Hazen, area engineer in Spokane for the Bureau of Reclamation, said that the present 18 generators at Grand Coulee Dam "will use all the water that will be available on a year-round basis for a long time to come."

Hazen has had charge of an investigation begun in 1952 for possible sites for an additional 12-generator power house at the dam on the Columbia River. He said plans for another power house on the west side were dropped because a tunnel to carry water from above the dam would cost too much.

The plan finally recommended, according to Hazen, calls for another power house at the east end of the dam. It would have a tailrace upstream from Caisson dock, and water would be brought from upstream in the river via one, two or three tunnels. One tunnel would serve four generators.

The first power house would consist of four generators like those in the present power houses, with provisions for adding two banks of four generators each later. Hazen estimated the cost of the third power house with four generators installed at roughly $75,000,000.

The inquiry, indicates that an added 10,000,000 acre-ft of upstream storage would provide enough water to keep the present generators running at capacity.

## Costs of Federal Dams Reduced by Economies

More favorable construction costs and economies effected by design have reduced costs of The Dalles and Chief Joseph Dams on the Columbia River by $63,252,000. The Corps of Engineers reports the savings for The Dalles amount to $45,372,000 and those for Chief Joseph, which is further along, are estimated at $17,880,000. This has been achieved without any impairment of multipurpose functions, according to Col. L. H. Foote, North Pacific Division Engineer.

The savings will mean The Dalles may have a total price tag of $303,000,000 instead of the orginal $348,000,000 while the cost of Chief Joseph should figure about $169,000,000 instead of the earlier estimate of $187,000,000.

## NEW B. C. FIRM WILL HANDLE HYDRO PROJECTS

Destined to handle heavy engineering and hydroelectric projects, a new firm to be known as British Columbia Engineering Co. Ltd. has been formed by British Electric Co.

BCE spokesman said the firm will handle jobs for outside clients also, anywhere in the world.

BCE's new acquisition was formerly British Columbia International Engineering Co. Ltd., which designed and developed Alcan project at Kemano and Cleveland Dam for Vancouver's water supply.

One of BCE's top executives, Thomas Ingledow, has been named president of the new firm which includes a staff of 40 engineers.

William C. Huber, present general manager of B. C. International Engineering Co. Ltd., will keep the same position in the new firm.

Design and supervision of BCE's own projects in the next five years will run to $150,000,000.

"This will give the enlarged engineering staff plenty to do," stated A. E. Grauer, BCE president. "At the same time we now have the engineering know-how and experience to tackle the largest developments, whether the problem involves a hydoelectric plant or any other type of project."

## Fourth Generator Placed in Service at Bridge River

A fourth 46,500-kw generating unit has been placed in service at B. C. Electric Co.'s Bridge River hydroelectric development, 130 miles northeast of Vancouver, making it the largest utility-operated producer of power in western Canada. New plant capacity is 186,000 kw.

A duplicate of three existing units, the new generator cost more than $4,000,000 and took two years to complete.

The Bridge River system will produce 465,000 kw when fully developed. One of the highest-head developments in Canada, water from Bridge River passes through a 2½-mile-long tunnel in Mission Mountain, then drops 1,200 ft through penstocks to the power house on Seton Lake.

• **Grays Harbor,** Wash., PUD commissioners have passed a resolution adopting as policy improvement of service to the north and south beaches over a three-year period. Cost of the program to extend and improve lines in the resort and cranberry bog sector is estimated at $500,000.


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## SACRAMENTO ASKS WATER RIGHTS FOR TWO PLANTS

The Sacramento Municipal Utility District has applied to the California state engineer for water rights for two power plants on the American River in addition to the six on which applications are pending.

James E. McCaffrey, general manager and chief engineer, reported a 12,000-kw power plant is proposed below a 140-ft-high dam near Kesley and a second, with a capacity of 11,000 kw, near Salmon Falls.

Previously SMUD applied for water rights in connection with power plants at Union Valley, Jaybird, Camino, White Rock, Auburn and Coloma.

The new filings, McCaffrey said, are designed to permit SMUD to take advantage of two power drops of the river which otherwise would be wasted.

The filings raise the potential power production in SMUD's American River proposals to 309,000 kw of installed capacity.

Hearings on the SMUD applications are expected to be set for next spring by State Engineer A. D. Edmonston.

## Puntledge River Project Is Being Rushed to Completion

Installation of a 20,000-kw generator in the Puntledge River development of the B. C. Power Commission near Courtenay, B. C., is being rushed. The Puntledge plant was owned by Canadian Colliers and was taken over by the commission, which is now engaged in further expansion.

The commission is also installing a new transmission system on Gabriola Island at a cost of $158,000. The six-mile, three-phase, 13,200 to 23,000-v line will initially serve 116 customers. It will be strung across Dodds Narrows to Mudge Island and then over False Narrows to a point on the center of West Gabriola.

• **Preliminary** 1955 budget estimate of Tacoma City Light, as presented by the Public Utilities Board to the city council for approval, is nearly $1,000,000 less than the 1954 figure. It totals $11,751,670 as compared to the 1954 budget of $12,695,600. Biggest change, effecting a paper saving of $700,000, is in the elimination of positions for which funds were budgeted this year but which never have been filled. Budgets for construction of new dams on the south fork of the Skokomish River and on the Cowlitz River will be set up apart from the department's all-around operation, Chief Accountant George F. Childs said.

*RESULTS OF AN INTELLECTUAL REVOLUTION . . .*

# "The Western Miracle" Continues . . . More Automatic Controls for Industry

Within recent weeks three new monthly technical magazines devoted to automatic control systems for industrial processes and machinery have offered the public their first issues. One of these is CONTROL ENGINEERING, a McGraw-Hill publication.

What has caused this surge of interest in the design and application of automatic control systems? What does it portend for the future of American industry? More important, what does it promise for the American standard of living, of which industry is and must be the servant? And what is the role of CONTROL ENGINEERING in this development? It is to those questions that this statement is addressed.

## A New Intellectual Revolution

It is frequently asserted that we are now in the throes of a new industrial revolution. The revolution is described as the eliminating of wasteful applications of human labor to repetitive tasks through new technology which makes it possible to transfer those tasks to automatically controlled machinery.

It is perhaps more accurate, however, to say that we are the beneficiaries of a new intellectual revolution in the application of science to industry. This new intellectual revolution points the way toward giant strides in the continuing process of taking dull and laborious work off the backs and minds of men and transferring it to machines operating in large batteries under automatic control.

The practical engineering work required to convert this intellectual revolution into a full-scale industrial revolution, however, in large part still remains to be done. It is to this task that CONTROL ENGINEERING will be devoted. Its role is that of bridging the gap, in engineering and economic terms, between the new conceptions of automatic control of industrial processes and their practical workaday application. These conceptions run the full gamut from systems of control for automatic factories making heavy industrial products to highly personalized systems of automatic control to warn people when they are approaching the broiling point in sunning themselves at the beach or becoming too drowsy to drive their cars safely.

## Enter the "Feed-Back" System

Enough work has been done to move these conceptions out of the realm of interesting dreams and into the realm of practical possibilities, and in some cases into the realm of practical realities. Crucial parts of this work were done during World War II when weapons were successfully equipped with "feed-back" systems

that automatically corrected mistakes made by the weapons in locating their targets.

The principle of the "feed-back" system is as ancient as the personal monitor that tells us not to run into each other as we walk along the street. It feeds back to our locomotion machinery the warning of a collision ahead. But the application of the principle to weapon control and then to more general machinery control required superlatively imaginative and skillful scientific development.

When a "feed-back" system that monitors an automatic process and keeps it lined up precisely is teamed up with a computing machine, capable of making lightning calculations that control both what goes into the process and what is done with the product, the horizons of automatic control become broad indeed. But in large part they still remain horizons. A vast range of practical engineering work remains to be done to realize anything like the full potential of automatic control of industrial processes and machinery.

## More and Better Jobs

There are those who view the surge of interest in automatic control with alarm. They conjure up a situation in which automatic processes will at once expand the ranks of the unemployed and reduce many of those still working in industry to the status of robots or automatons.

A look at the record of the American economy — a record of amazing growth, steadily improving job opportunities and a constantly rising standard of living — demolishes the basis for such fears. The introduction of new and more efficient industrial machinery and processes obviously cannot be accomplished without creating some disturbance for some individuals and some companies. But consistently the longer range effect of such local and temporary disturbance has been more jobs and better jobs for Americans.

It is no accident that, while the proportion of industrial wage earners in our population is virtually the same as it was in 1920, the proportion of professional and salaried workers has doubled. The proportion of unskilled workers, furthermore, has dropped by half. This has been an essential part of a continuing process by which drudgery has been transferred to machines while the workers who formerly did the drudgery have been graduated to jobs calling for greater competence and providing better pay.

## Higher Living Standard

A British historian, H. J. Hancock, has referred to this general process as "the Western miracle" — that of providing an ever higher and higher standard of living for more and more Americans. The key element in this miracle has been more and more reliance on power-driven machines to get the day's work done.

In the nature of the extremely complicated apparatus involved, full development of systems which have passed through the "think stage" into the status of practical possibilities will be a time-consuming process. It will also be a very exacting process, calling for a tremendous application of engineering skill and ingenuity. However, the engineers who are concentrating on this difficult, workaday phase of the development of apparatus for automatic control will be inspired by the knowledge that they are making a crucial contribution to technical progress which holds great promise of good for the American people.

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A MESSAGE TO AMERICAN INDUSTRY • ONE OF A SERIES

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## Higher Living Standard

A British historian, H. J. Hancock, has referred to this general process as "the Western miracle" — that of providing an ever higher and higher standard of living for more and more Americans. The key element in this miracle has been more and more reliance on power-driven machines to get the day's work done.

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## NEW INDUSTRY WANTED, COUNCIL REPORTS

Members of the Puget Sound Utilities Council report that they have the welcome mat out for new industry and expect to be able to provide as much power as may be required.

Dr. Paul J. Raver, City Light superintendent and council chairman, said a plant needing as much as 25,000 kw, such as Consolidated Mining & Smelting Co.'s proposed ammonia plant at Portland, could be supplied. No industry would be discouraged on the basis of power alone, he declared, but the council would oppose any industry that would bring air or water pollution problems and is not encouraging large users of power who employ little manpower.

Formed to push industrial development, the five-member council holds itself responsible for making power available, according to Raver. If hydroelectric plants are not sufficient, steam plants will be used. Power will come from resources of council members, he said, not from Bonneville Power Administration, with its 10,000-kw limitation. Raver said the council can't assure the continuance of cheap power, however, and that any increases in rates might lower demands.

The council itself has no construction program, but over the next 10 years individual members plan to develop an additional 2,500.000 kw of generation at a cost of $650,000,000.

The council is composed of Seattle City Light; Tacoma City Light, Puget Sound Power & Light Co. and the Chelan and Snohomish PUDs.

## B. C. Will Tell Application of Canadian Laws to Project

The British Columbia government has agreed to provide the Puget Sound Utilities Council with information on the application of Canadian laws to a proposed $425,000,000 hydroelectric power project on the Columbia River at Mica Creek north of the border between the United States and Canada, according to Paul J. Raver of Seattle City Light, council chairman.

The council meanwhile is studying the application of U. S. laws to the project, as well as engineering problems.

The dam would impound about 10,-500,000 acre-ft of water which, when released at low-water periods, would add 1,200,000 kw to the firm-power capacity of downstream dams within the United States at Grand Coulee, Rock Island, Bonneville and other locations. British Columbia therefore believes the United States or some local agency should pay all or most of the dam's cost, estimated at $300,000,000, with the province perhaps building a $125,000,000 power plant with an installed capacity of 1,400,000 kw.

The Puget Sound Utilities Council could not undertake the project itself, since it is simply a planning agency, but some of its members might. The Puget Sound Power & Light Co., Chelan PUD and Snohomish PUD have been mentioned as potential sponsors, with Tacoma and Seattle City Light figuring in the transaction as power purchasers.

## USBR Contracts for Firm Power from Eklutna

With the first 15,000-kw unit of the $29,500,000 Eklutna hydroelectric project in Alaska scheduled to go into operation late this year, the Bureau of Reclamation has contracted for all firm power the project will generate, according to Robert Jennings, district manager, USBR.

The City of Anchorage will take 16,000 kw, the Metanuska Electric Assn. 5,000 and the Chugach Electric Assn. 9,000. The Military Command is negotiating for the purchase of non-firm energy for fuel replacement.

Other projects under study by the bureau include a dam 500 ft high in Devil's Canyon on the Susitna River with an installed capacity of some 200,-000 kw. Installations of 15,000 kw each are proposed on Lake Swan near Ketchikan and Blue Lake near Sitka.

• **Thirteen Washington** state agencies, including the State Power Commission, will have to move their headquarters from Seattle to Olympia, the state capital, as the result of a decision by the State Supreme Court. The decision halts proposed construction of a $4,000,000 state office building in Seattle. Since Seattle is the largest city in the state, many state agencies over the years had found it convenient to establish their headquarters there. The state constitution prohibits such a practice, however, the court ruled, although each agency may keep a branch office in Seattle.

• **Southern Colorado Power Co.** has started construction at Canon City, Colo., of a $3,000,000 steam generating plant tripling the output of the present Canon City plant. The 1,500-kw plant will be completed within a year.

• **Seattle City Council** has approved an ordinance increasing the tax on the gross revenues of City Light from the present level of 4% to 5%, providing $250,000 additional revenue.

## FEATHER RIVER PROJECT AUTHORIZED BY UTILITY

Construction of Pacific Gas and Electric Co.'s Poe hydroelectric project on the North Fork of the Feather River has been authorized by the company, Norman R. Sutherland, PG and E vice-president and general manager, announced. The company has appropriated $37,600,000 for the project.

The first work to be undertaken will be the construction of project roads, including improvement of 6.5 miles of existing county road and construction of 2.5 miles of new road.

The Poe project will develop 106,000 kw. It will consist of a concrete diversion dam 60 ft high about two miles downstream from PG and E's Cresta power house, a tunnel 6½ miles long with a surge chamber at the downstream end, two steel penstock pipes and the power house, which will have two generating units.

The company now has six generating plants with an aggregate capacity of 382,000 kw in its Feather River system.

## B. C. Commission Approves Improvement Program

Rehabilitation and improvements on the Whatshan power development of the B. C. Power Commission have now been approved.

The power plant on Lower Arrow Lake in British Columbia was practically destroyed in a slide 11 months ago. It is estimated that the work now completed in the rehabilitation of the plant cost $1,500,000.

The disaster resulted in the resignation of all members of the power commission and several government engineers following a sharply worded, critical report brought in by the Royal Commission investigating the occurrence.

• **Lane County Electric** Cooperative held open house at a new headquarters building in Eugene recently. Heading the reception line was Smith L. Taylor, the 83-year-old president of the board of directors and incorporator of the co-op. The building, located at 1715 Franklin Blvd., was constructed under a $82,977 general contract awarded earlier this year to J. S. Crepeau Construction Co., Cottage Grove, Ore. Management, accounting, credit and engineering offices are combined in the front of the structure. A warehouse across the rear houses supplies, shops and the co-op's truck terminal.

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First start on a federal power project under the Eisenhower Administration will be in Wyoming. A $1,000,000 appropriation to begin the $44,300,000 Glendo unit of the Missouri River Basin project was voted by the 83rd Congress. At left is an artist's sketch of Glendo Dam and power plant, which will be built about 85 miles southeast of Casper. At right is the site for the Fremont Canyon power plant at the backwaters of Alcova reservoir, about 130 miles upstream from Glendo. Glendo power plant will have two 12,000-kw generating units, utilizing a maximum operating head of 133 ft and a minimum of 67 ft. Fremont Canyon power house will have two 24,000-kw generating units. Initial construction bids have been called for Glendo unit

## Noxon Rapids Dam To Be Started in Mid-1955

Washington Water Power Co. hopes to begin building the $85,000,000 Noxon Rapids Dam by the middle of 1955 and to produce power by late 1959. Kinsey M. Robinson, WWP president, said that test drillings and preliminary engineering are progressing rapidly at the site on the Clark Fork River in northwestern Montana. WWP, said Robinson, expects to file application for a license for the 350,000-kw project with the Federal Power Commission early next year. It will be WWP's most expensive project and its biggest power producer.

## REA Co-ops May Build Steam Generating Plant

Pine Bluffs, Wyo., is gaining favor among three sites under consideration by the Tri-State Generation and Transmission Assn. for a $10,500,000 steam generating power plant to be financed with an REA loan.

The association is made up of 25 REA cooperatives in Colorado, Wyoming and Nebraska. They have been notified by the Bureau of Reclamation that sufficient federal hydroelectric power will not be available after 1956 or 1957 to meet the co-ops growing need.

Sites under consideration are Pine Bluffs in Wyo.; Gering, Neb.; and Fort Morgan, Colo. Marion Wilson, president of the Tri-State association, said delegates from 24 of the member co-ops reviewed the site possibilities at a meeting in Cheyenne, Wyo.

Wilson said Pine Bluffs appears most suitable because of its adequate water supply and the ease with which coal from Wyoming mines can be transported by rail. Pine Bluffs is on Lodge Pole Creek between Cheyenne and Sidney, Neb.

• **Bids** for a 100,000-kva generator again have been rejected by the Seattle Board of Public Works. The generator will be the fourth in City Light's Ross power house on the Skagit River. The American-Elin Corp., owned principally in West Germany, was low bidder at the recent opening Sept. 1. It asked $1,047,350. Rejection of the low bid was due, not to its foreign ownership, but to its noncompliance with specifications, the board said. Proposals received at an earlier opening July 14 had been rejected as too high or not conforming to specifications.

• **City of Wrangell,** Alaska, has applied to FPC for a preliminary permit to construct a hydroelectric project on Wrangell Island. The project would include a 20-ft dam on Pat Creek at the outlet of Trout Lake, with a 2,000-ft penstock to a power house on Zimovia Strait at tidewater and a transmission line to the city.

• **Restudy** of the proposed Trinity River project in northern California has been started with the possibility of construction of power facilities by public or private agencies rather than the federal government, according to Fred G. Aandahl of the Interior Department. This would be a means of reducing the cost of construction, he said.

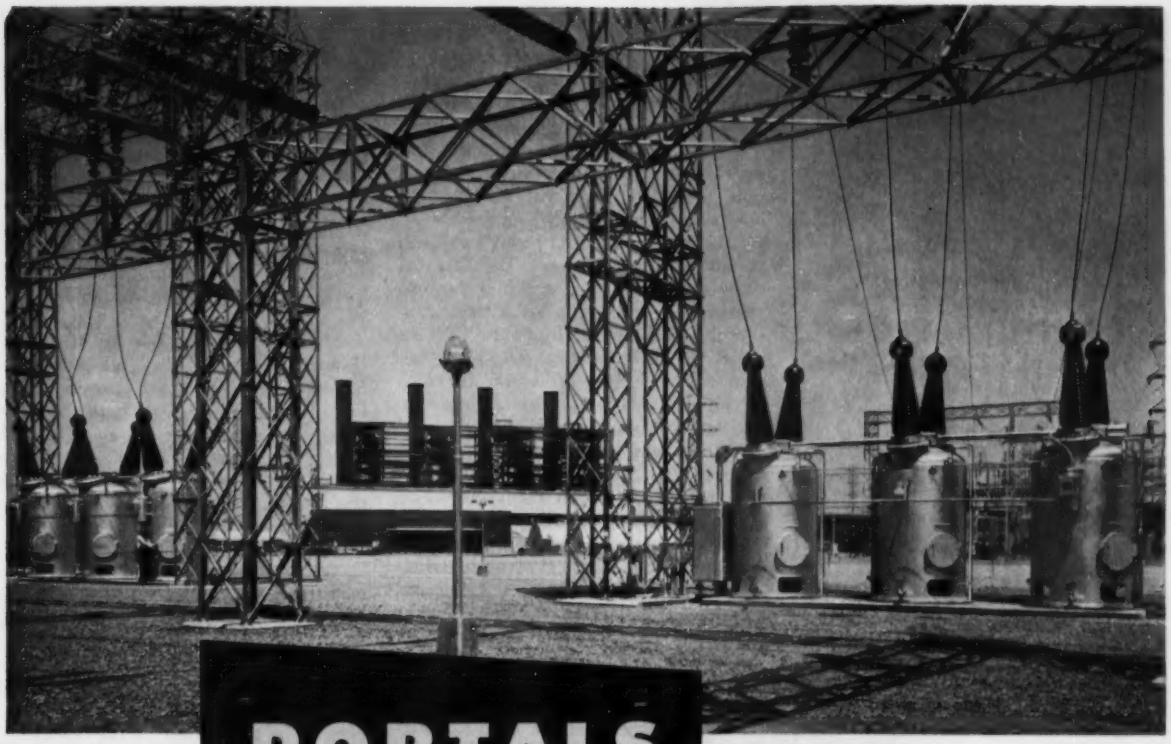
## Bids Made for Construction At The Dalles Project

Guy F. Atkinson Co. and Ostrander Construction Co., holders of some $35,000,000 worth of work at The Dalles Dam project on the Columbia River, is the apparent low bidder for construction of the navigation lock, north nonoverflow and north fish ladder at $12,708,179. Corps of Engineers reports the bid was more than $200,000 under the government's estimate of $12,914,368 for the work.

The Atkinson-Ostrander team holds contract for the substructure for eight main units of the power house and the east fish ladder for $20,042,000 and the spillway dam, tainter gates and approach channel for $14,438,000. The other major contract is held by The Dalles Powerhouse Constructors for $31,782,000 for building the substructure for 14 main units of the power house.

A recent accounting of contracts listed a total of $98,373,000 and subsequent awarding of small items prior to the opening of the latest large phase placed the awards well over $100,000,000.

• **Metlakatla Indian Community** in Alaska has ordered turbines and generators for a $1,500,000 hydroelectric project and expects to call bids soon for penstock and power house construction, as well as for switchgear and a substation. James Leffel & Co. of Springfield, Ohio, will furnish two 1,765-hp turbines and accessories for $103,953 while the Elliott Co. of Jeannette, Pa., will supply two 1000-kw water wheel generators for $40,652.



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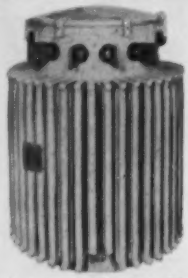

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## UPSTREAM PROJECTS PREFERRED BY COMPACT COMMISSION

The Columbia interstate compact commission reached tentative agreement at a Missoula, Mont., session that upstream projects, primarily irrigation, should be given precedence over downstream power and navigation.

The tentative conclusion, proposed by State Senator Eugene E. Marsh of Oregon, is the first reached by upstream and downstream interests on division of the resources of the Columbia River and its tributaries. The decision was to be reviewed when the commission met Oct. 9 at Wenatchee.

State Senator Lloyd Wallace of Montana was appointed chairman of a committee to revise the draft compact to include the new agreement on subordination of interests.

As proposed, the subordination clauses of the compact would be effective for 50 years, although some downstream states argued for a 25-year limitation.

Earlier during its recent session in Missoula, Mont., the commission approved a proposal permitting the compact to become effective with ratification by Washington, Oregon, Idaho and Montana regardless of the action of legislatures in Nevada, Utah and Wyoming.

• **Los Angeles** Department of Water & Power has sold $19,500,000 in revenue bonds due September 1, 1955 to 1984 to associates Glore, Forgan & Co., and C. J. Devine & Co. Net interest cost was stated at 2.259% at a 100.074 bid. Proceeds will go for current construction, including steam generating and hydroelectric equipment, transmission lines, the distribution system and general facilities.

• **California Electric Power Co.** has sold 170,000 shares of common stock at $11.452 a share for $1.946.840 to underwriters, Carl M. Loeb, Rhoades & Co., and Bear, Stearns & Co. Proceeds will be used to redeem CalElectric's 38,000 share issue of $2.50 sinking fund accumulative preferred.

• **Southern California Edison** Co. sold its $30,000,000 first and refunding mortgage bond issue to a syndicate headed jointly by The First Boston Corp. and Dean Witter & Co. at a high bid of 100.0199 with a 3% interest coupon.

• **Full utilization** of the potential firm energy output of the proposed 15,000-kw Blue Lake hydroelectric project near Sitka, Alaska, would require establishment of a pulp mill or similar industry in the area, according to a report prepared under the direction of Robert Jennings, Alaska district engineer for the Bureau of Reclamation. The report gives the project a favorable benefit cost ratio of 1.45 to 1. With a pulp mill taking power and water, cost of the project would be repaid in full with 2.5% interest during a 50-year amortization period, it says.

## Management Board Proposed By Northwest Group

Members of the Northwest Public Power Assn. are studying the preliminary draft of a bill, proposed for introduction in the next session of Congress, for creation of a Columbia River Development Corp. The bill is being drafted in accordance with a resolution passed by the association at its March convention.

It calls for a government corporation to take over the Bonneville Power Administration and all federal hydroelectric projects in the Pacific Northwest, with 50 years to pay off the government's remaining investment. The proposed corporation would be authorized to issue revenue bonds for new projects, to be purchased by the Treasury, as in the St. Lawrence Seaway Development Corp. Act recently approved by President Eisenhower.

## School of Fisheries Making Studies of Salmon Runs

The University of Washington School of Fisheries, in a $120,000 project financed by the Corps of Engineers, will seek to determine how swift a river current can be before it offers an insurmountable obstacle to a salmon upstream-bound for its spawning grounds.

A glass flume, 24 ft long, has been built at the school's Fisheries Center, adjoining Lake Washington Canal in Seattle, to allow both fast and slow currents to be tested simultaneously. Biologists will seek to determine the limit of a salmon's endurance in seeking to breast a strong current.

In other phases of the two-year project, studies will be made on the effects of using electricity or other methods to guide salmon and steelhead trout past dams in both directions. Varying intensities of light, screens of bubbles and changes in temperature and velocity of water are some of the methods being developed for use in this project.

Feasibility of using electricity will depend upon the casualties which might be inflected upon the fish, said Leon Verhoeven, biologist in charge of experimental work at the Fisheries Center.

## RECLAMATION ASSOCIATION MEETING IN PORTLAND

Secretary of the Interior Douglas McKay, Commissioner of Reclamation Wilbur A. Dexheimer and Maj. Gen. S. D. Sturgis, chief of the Corps of Engineers, have top billing for the 23rd annual convention of the National Reclamation Assn. in Portland, Nov. 8-10. William E. Welsh, association secretary-manager of Washington, D. C., announced the names. Among other speakers listed for the three-day program are Governors Paul Patterson of Oregon and Sigurd Anderson of South Dakota; Dr. R. G. Gustaveson, director of Resources for the Future, Washington, D. C., Harold T. Nelson, Boise, Idaho, regional director of the Bureau of Reclamation.

## Merger of Coast Counties Into PG and E Completed

Merger of Coast Counties Gas and Electric Co. into Pacific Gas and Electric Co. was completed Aug. 31, when PG and E filed a certificate of ownership with the California Secretary of State.

In acquiring sole ownership of Pacific Public Service Co. and its subsidiaries, of which Coast Counties is the principal, PG and E added 139.283 gas, electric and water customers. Continuity of service was not affected by the switch-over.

Norman R. Sutherland, vice-president and general manager of PG and E, reiterated earlier statements that the 611 Coast Counties employees are being retained in the merged organization, and will keep their seniority, pension rights, group life insurance and other employee benefits through similar PG and E programs.

• **Grand Canyon** will be added to Arizona Public Service Co.'s service area as soon as construction of transmission lines and substations is completed. Contracts were signed by the National Park Service, Fred Harvey and Arizona Public Service to permit the company to take over all electric distribution. The 200 customers in the area formerly were served by a local generating plant owned by the Santa Fe Railroad. That plant will now be maintained on a stand-by basis for emergency use.

• **Paul J. Raver,** Seattle City Light superintendent, has asked the city council for $300,000 to finance preliminary studies of a proposed power development on the Pend Oreille River at the Boundary site.


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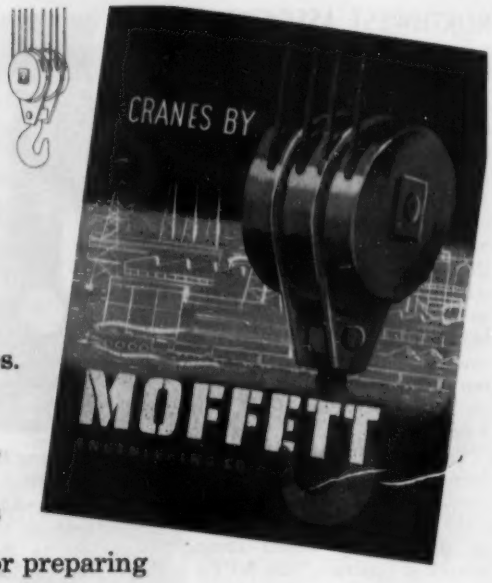


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## NORTHWEST ASSOCIATION PROTESTS BPA CLAUSE

Northwest Public Power Assn. has filed a protest with the Federal Power Commission arguing the rate adjustment clause in Bonneville Power Administration's proposed new rate schedule is a change of contract terms and therefore beyond jurisdiction of the commission. The association, which notes its member systems pay some $15,000,000 annually for Columbia River federal energy, recommends that FPC approve BPA's rate filing but not the rate adjustment clause on pp 2, 4, 8, 10, 12 and 14 of BPA's Aug. 4 filing.

"It is our view that this 'rate adjustment' clause if made effective and if applied at the stipulated dates in 1956, 1957 and 1958 or on any one or more of those dates would constitute a breach of contract," the NPPA protest states.

"Our electric systems now have contracts that permit rate increases only on the quinquennial anniversary date, namely, Dec. 20, 1954, and Dec. 20, 1959. These contracts are the result of negotiation. They can be changed through negotiations. But they cannot be changed unilaterally by the BPA, either with or without concurrence of the FPC, without constituting breach of contract.

"Rate changes are subject to jurisdiction of the commission but contract changes are not so subject. The 'rate adjustment' clause is a major contract change. It is not a rate, a rate change or a rate escalator clause. In our view it cannot have a legitimate place in this filing."

## New Rate Schedule Affects Electric Space Heating

Washington State Public Service Commission has approved a new rate schedule for Puget Sound Power & Light Co. for use of electricity in space heating.

The company had accepted no applications since World War II, when the government declared there was a power shortage, but believes it now has the capacity to take care of the extra load that would come with space-heating. In cases where the connected load is kept below 10 kw, the person heating his home with electricity will continue on the all-electric rate, which allows him the first 270 kwh for $4.50, plus $0.07 per kwh up to 1,000 kwh and 1c per kwh over 1,000 kwh.

If a customer's connected load is over 10 kw, he pays 1.8c per kwh for everything over 10 kw, at 160 kwh per kw, under the new rate.

**Donning Hawaiian shirts for the occasion, Jess Zeigler, left, manager of engineering for Hawaiian Electric Co., and H. C. Buckingham, assistant mechanical superintendent at the Sunnyvale, Calif., plant of Westinghouse Electric, witnessed final tests on the 50,000-kw steam turbine being built for the utility. The machine is scheduled to start operating by Christmas in a new generating plant in Honolulu**

The company specifies that it must approve installations under the new rate and that thermostatic controls be provided.

• **Petition** by the Port of Seattle to the city council that the port commission be allowed to resell electricity to one of its tenants has met with a strong protest from Seattle City Light. The port said it anticipated a $13,000 annual profit on the transaction but City Light declared the figure should be nearer $25,000. Another customer has the resale privilege, City Light said, but only because it operates under a contract City Light took over from Puget Sound Power & Light Co.

• **California's** Public Utilities Commission has authorized a $90,367 interim rate increase to California Electric Power Co., effective Sept. 13. The order will affect bills of approximately 8,300 customers in San Bernardino, Calif., with an average monthly increase of 12%. The Commission's order is in line with the recent increase granted Southern California Edison Co., serving the same area. CalElectric has another application for a system-wide increase of $1,337,000 currently being heard by the commission.

• **Pacific Power & Light Co.** has accepted the bid of Halsey Stuart & Co. to purchase $30,000,000 in 30-year first mortgage bonds for the price of 102.1299 with an interest rate of 3½% per year. FPC has approved the price and interest rate.

## TACOMA INSTITUTES SAFE DRIVING PROGRAM

Tacoma City Light has instituted a program to train new drivers and check on driving habits of older personnel.

The program includes a written examination and a driving test to determine a driver's reaction time, smoothness of operation, judging of distance, etc.

The program also has value as a public relations effort, Gordon Tatum, personnel director, believes. "If you see a driver in a city-owned car observing all the rules of safety and extending courtesy to other motorists, you're going to feel much better than if he acts like the rules don't apply to him," Tatum pointed out.

## Engineering Course Offered To Executives and Staff

A 1955 Engineering and Management course for executives and personnel is offered by the University of California School of Business Administration. It will be held on the Los Angeles campus from Jan. 31 to Feb. 11, with general lectures and sessions on specific subjects available throughout day-time periods. Dinner meetings also will be held. No University credit is given but certificates of achievement will be awarded to those successfully completing the course. Inquiries should be addressed to Edward P. Coleman, 4173E Engineering Bldg., University of California, Los Angeles 24.

• **Arizona Public Service Co.** has established a stock-buying program that allows all regular employees to purchase company stock through voluntary pay roll deductions. In announcing the plan, President Henry Sargent emphasized that the utility was not urging employees to buy stock, but was making the plan available for those who want to participate. Money from pay roll deductions is turned over to the First National Bank of Arizona, which purchases common stock on the open market and holds it for participating employees.

• **Assessed value** of utility properties in Oregon increased from $272,466,773 in 1953 to $274,568,344 for the current tax year. True cash value was reported up from $596,603,294 in 1953 to $637,886,537 in the current year. Hydro developments on the Umpqua River gave Douglas County a 15.6% increase in cash value as compared with a state total of 6.9%.

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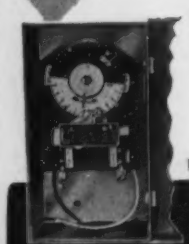

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1. The names and addresses of the publisher, editor, managing editor, and busines managers are: Publisher, McGraw-Hill Company of California.....68 Post Street, San Francisco, Calif. Editor, George C. Tenney.....68 Post Street, San Francisco, Calif. Managing editor .....None Business Manager, T. H. Carmody, Jr.....68 Post Street, San Francisco, Calif.

2. The owner is: McGraw-Hill Publishing Company, Inc., 330 West 42nd Street, New York 36, N. Y.; Stockholders holding 1% or more of stock: Donald C. McGraw and Willard T. Chevalier, Trustees for Harold W. McGraw, Donald C. McGraw and Elizabeth M. Stoltzfus, all of 330 West 42nd Street, New York 36, N. Y.; Donald C. McGraw and Harold W. McGraw, Trustees for Catherine M. Rock, 330 West 42nd Street, New York 36, N. Y.; Donald C. McGraw, Executor of the Estate of Curtis W. McGraw, 330 West 42nd Street, New York 36, N. Y.; Donald C. McGraw, 330 West 42nd Street, New York 36, N. Y.; Mildred W. McGraw, Madison, New Jersey; Grace W. Mehren, 536 Arenas Street, La Jolla, California; Touchstone & Company c/o Wellington Fund, Inc., Claymont, Del.

3. The known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages, or other securities are: None.

4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was: (This information is required from daily, weekly, semiweekly, and triweekly newspapers only.)

GEORGE C. TENNEY, Editor

Sworn to and subscribed before me this 24th day of September, 1954.

[SEAL] MAXINE O'BRIEN

(My commission expires Dec. 23, 1957.)

# NOTES ON THE TRADE

• **Electric Specialty Co.** has been appointed as sales representative in the 11 Western states for Phelps Dodge magnet wire. Electrical Specialty has offices in Los Angeles, San Francisco, Denver and Seattle. Managers at these locations are: **L. M. Swanson,** 418 E. Third St., Los Angeles; **L. L. Gribble** and **W. T. Martin,** 316 11th St., San Francisco; **R. H. Bosworth,** 1101 Stout St., Denver; **C. D. Floyd,** 2406 First Ave. S., Seattle.

• **Westinghouse Electric Supply Co.** has announced two new Pacific Region appointments. **Martin B. Sauer,** Southern California district manager of consumer products since 1952, has been named consumer products sales manager for the Pacific region. **Walter H. Robbins,** former service manager for the Miami, Fla., area, is new Pacific regional service manager. Both will headquarter in San Francisco.

• **Valley Electric Co.,** 630 N. Grant St., Stockton, Calif., has been named a distributor for Allis-Chalmers transformers in San Joaquin, Contra Costa, Stanislaus and Merced counties of California. **E. W. Raffety** is president and **W. J. Quinn Jr.** is secretary-treasurer of Valley Electric.

• **William O. Riley,** formerly assistant superintendent of the Anderson, Ind., mill of Anaconda Wire & Cable Co., has been made superintendent of the company's newly expanded mill at Orange, Calif. A graduate of the U. S. Naval Academy, Riley joined Anaconda as engineer in 1947.

• **Patrick J. Selak,** formerly with AEC, has joined the staff of Kaiser Engineers Division of Henry J. Kaiser Co. He will be in the atomic energy division and will assist in the firm's program for development of industrial and research applications of nuclear energy.

• **Dick Hyde Co.** has changed its name to Hyde Sales Co. Address of the company, which deals in electronic equipment, is 3250 S. Dexter St., Denver 22, Colo.

• **North Coast Mercantile Co.** of Eureka, Calif., has been appointed wholesale agent of Westinghouse electrical apparatus. **Donald Compton** is manager of the electrical supply division of North Coast.

# NEWS ABOUT PEOPLE

Horton

## PG and E Appointments Follow Recent Merger

Following merger of Pacific Public Service Co. and its subsidiary, Coast Counties Gas & Electric Co., into the Pacific Gas and Electric Co. system, these changes in executive personnel were announced:

**Jack K. Horton** was made a vice-president of Pacific Gas and Electric Co., effective Sept. 1. Former president of Coast Counties Gas & Electric and Pacific Public Service, now merged into the PG and E system, he was graduated from Stanford University in 1936 and admitted to the California Bar in 1941. He joined Pacific Public Service in 1944 as secretary and legal counsel. **Roy N. Dreiman** has been appointed assistant comptroller of Pacific Gas and Electric Co. He was vice-president and treasurer of both Pacific Public Service Co. and Coast Counties Gas and Electric Co. from 1948 until the companies were merged with PG and E. Dreiman, president of the Pacific Coast Electrical Assn., started his career in the public utility business in 1915 with Indiana Power and Water Co. at Vincennes, Ind.

**Alan R. Bailey** has been made assistant to PG and E Vice-president and General Manager Norman R. Sutherland. He was vice-president in charge of operations of Coast Counties, which he joined in 1930.

• **Richard Hartshorne,** who has been representing Apparatus Sales Division of General Electric Co. with American Factors in Honolulu, has returned to the San Francisco office.


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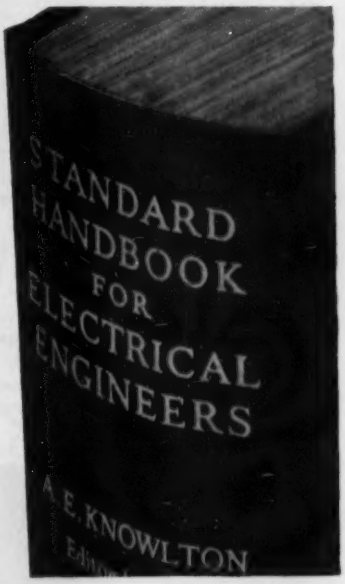


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## Promotions Announced In Western Organizations

Executive organization changes were announced last month by President Henry B. Sargent of Arizona Public Service Co.

Elected officers were **Don Willis,** vice-president in charge of sales; **Walter T. Lucking,** vice-president in charge of operations; **T. A. Phillips,** vice-president in charge of engineering.

**George H. Groh** moves up from vice-president in charge of operations to vice-president and assistant to the executive vice-president in charge of planning and production.

**Douglas B. McGregor,** former vice-president in charge of sales and personnel, becomes vice-president in charge of personnel, with added duties in the field of taxes and property evaluation.

**Claire Titus** has been named assistant to the president and general manager.

Kimball

• **John T. Kimball,** executive vice-president of Arizona Public Service Co., has resigned to become vice-president and general manager of Idaho Power Co. He took over his new duties Oct. 1, replacing **T. E. Roach** as general manager. Roach will continue as president and chairman of the board. Kimball started his utility career in 1934 with Mississippi Power & Light Co. In 1946 he joined Central Arizona Light & Power Co. as manager of research and development. In 1948 he was named vice-president of Arizona Public Service, which was formed through merger of Central Arizona Light and Arizona Edison. He was appointed executive vice-president, responsible for sales and service, in 1953.

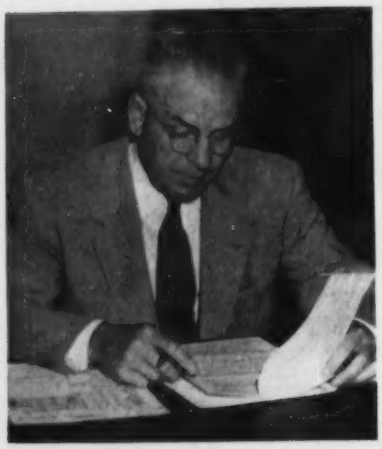
• **N. H. Callard** has been made operation and maintenance director and **Earl D. Ostrander** has been named director of administrative management for Bonneville Power Administration. Callard has held commercial, engineering and managerial posts with Westinghouse and was that company's Pacific Coast utility manager, with headquarters in San Francisco, from 1928 to 1939. During World War II he was with the U. S. Navy Bureau of Ships for two years and in 1943 was assigned to India by the Department of State. In 1947 he was made manager of the Hilo Electric Co. in Hawaii. Ostrander has been with BPA since 1941 and has been controller since 1945.

Tice

Davenport

• **Appointment** of **H. W. Tice** as senior vice-president and **James F. Davenport** as vice-president and general manager of Southern California Edison Co. was announced by President Harold Quinton. Tice, formerly vice-president and general manager, joined the company in 1922 as an electrician at Visalia. Davenport, formerly vice-president and assistant general manager, has been with Edison since 1926, when he joined the engineering department.

• **Ralph E. Gale,** vice-president and director of Idaho Power Co., has taken over managerial responsibility for engineering and operations since retirement of Vice-president and General Superintendent **B. C. Russell** on Aug. 31. **J. F. Emery,** who has been assistant to the general superintendent, was made superintendent of electrical operations and construction. A graduate of the University of Washington in electrical engineering, Gale joined Idaho Power in 1921 as switchboard wireman on construction of the Thousand Springs power plant. Emery went to work for Idaho Power in 1918 while he was still in high school. After graduation from the University of Washington, he was with USBR for a short time, then returned to Idaho Power.

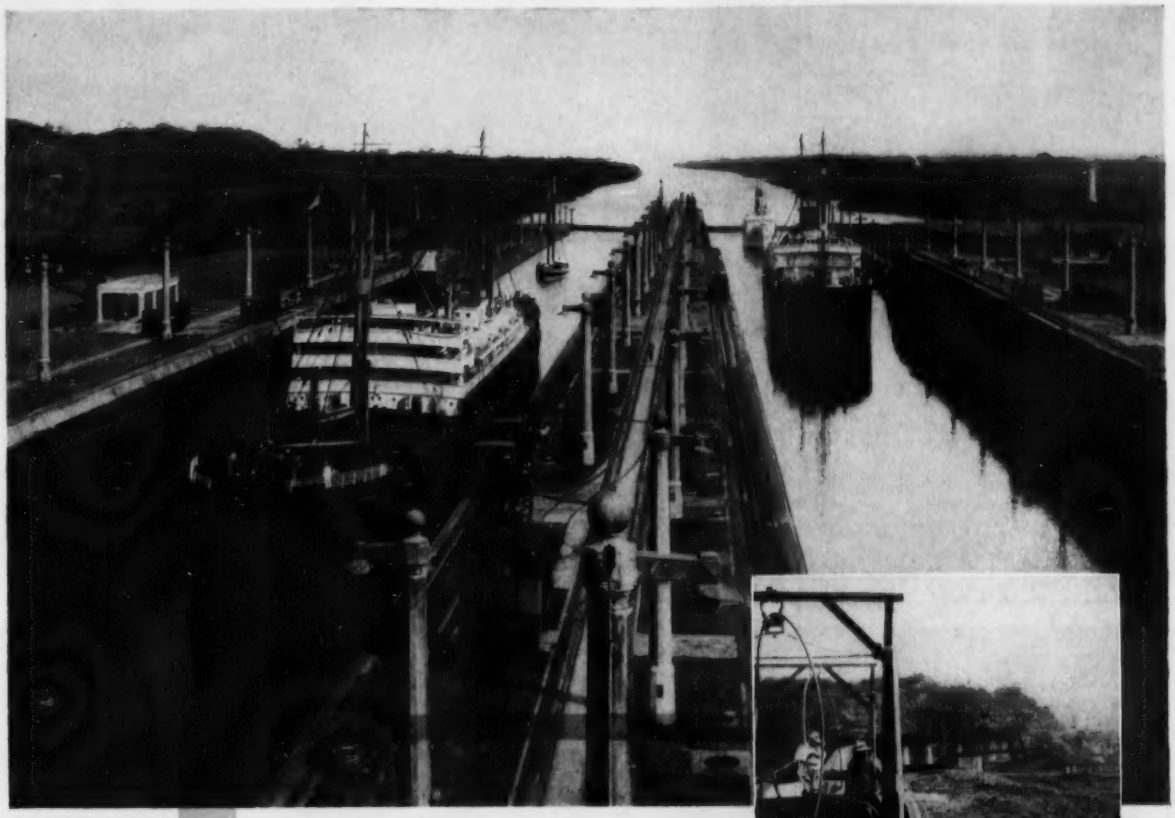


Gale

## Deaths

Teo L. Rosenberg, electrical contractor of Oakland, known throughout the West for long association service to his industry, died Aug. 28. He had been NECA District 6 vice-president from 1945-1950, National Labor Relations committeeman, National Employees Benefit Board member. He has also been president of the Northern California Chapter, served as its governor and was treasurer of a predecessor association. He was a director of PCEA, president of East Bay Electric Club in 1927 and recently a director of NISA. He started the T. L. Rosenberg Co. in 1924, soon after graduation from University of California as an electrical engineer in 1920, delayed by World War service in the U. S. Navy.

• **H. R. Basford,** 80, founder of H. R. Basford Co., San Francisco wholesaler of household appliances, died Aug. 31 President of the firm in 1930, when it was incorporated, he was named chairman of the board in 1945 and retained that position until his death.



*The Panama Canal*

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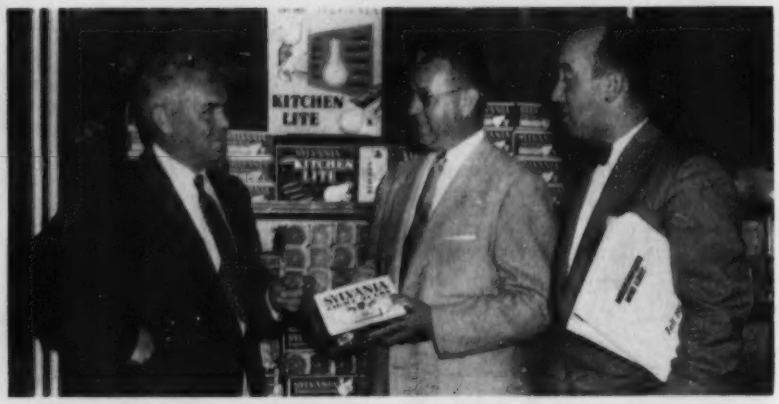
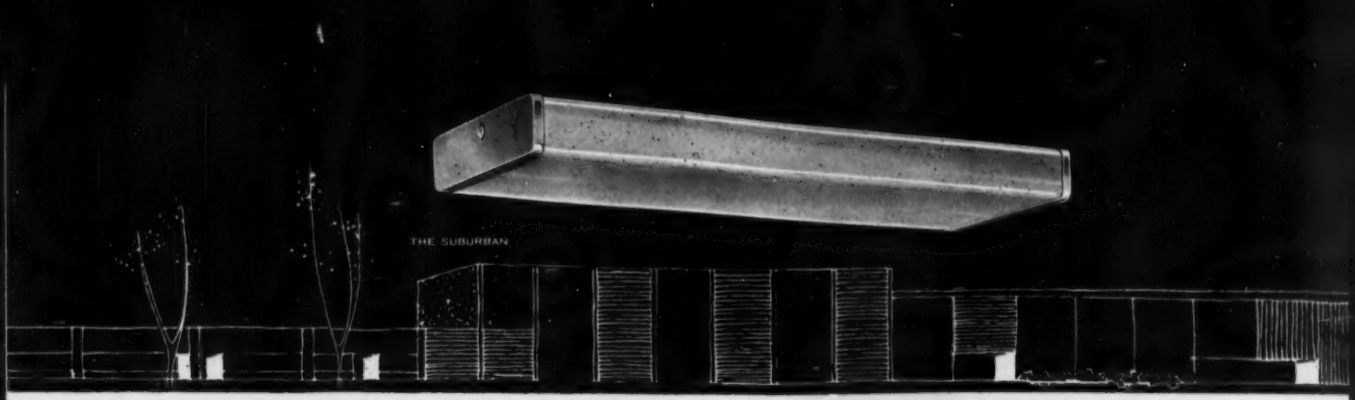
# PROFILES




Garlan Morse, Pacific Coast director of sales, called his 30 field men from six Western states for a three-day sales conference at Carmel with Charles A. Burton (center), Sylvania Electric Products general sales manager, lighting division, and L. P. Pleasants, formerly of Los Angeles, who was recently promoted to merchandise manager for his ideas

The "Main Street Cowboys," Pendleton, Ore., civic organization, met visiting investment men when Pacific Power & Light Co. landed its three-plane tour at the Round-Up city. (See story, page 120.) PP&L President Paul B. McKee was decked out in Western regalia and made an honorary member of the Cowboys, after this picture was taken

In recent appointments at Columbia-Geneva Division, United States Steel Corp., John H. Sargent, left, was made sales engineer, George W. Searles, senior technical field representative, electrical wire products. Searles is at Los Angeles. Sargent, who is headquartered in San Francisco, also serves the Northwest and Intermountain districts

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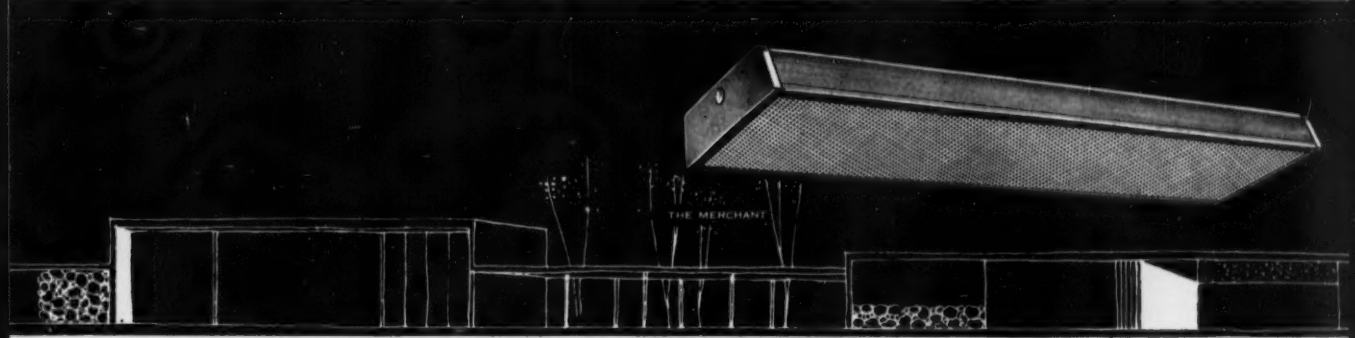


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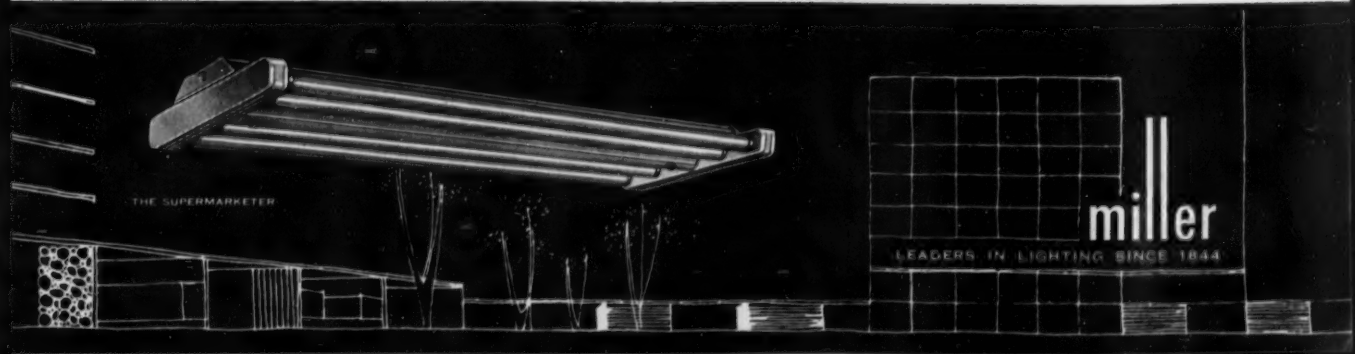

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# MEET A LIVE WIRE!

## • *Frank A. Tracy*

President, Sierra Pacific Power Company, joined PCEA in 1940. He has served twelve years as a Director, one as President ('50-'51), and three as a Vice President, his current office.

Born and raised in Maine, Tracy attended the University of Maine, graduating in 1919 as an Electrical Engineer. His utility career includes five years with Stone and Webster; two with Ponce Electric Company, Puerto Rico; twelve with Blackstone Valley Gas and Electric Company, Rhode Island; and two as an expert engineer analyst in Washington, D. C. In 1940 Tracy came West to join Sierra Pacific Power Company as Assistant Manager and, in 1942, became President.

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**Pacific Coast Electrical Association**

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